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SEPTEMBER 2, 1933

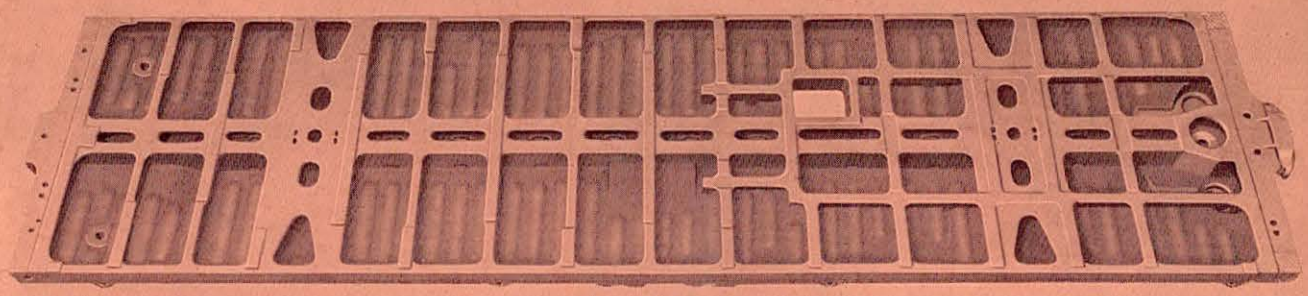
Railway Age

Founded In 1856

Paying for New Equipment Without Having It

IF a considerable percentage of the older railway equipment should be retained, greater expenditures than could be justified by sound economy would be required to restore much of it to serviceable condition and to maintain it.

In the long run, the railways would be paying for new, modern equipment without enjoying the benefits therefrom.



COMMONWEALTH WATER BOTTOM TENDER FRAME

PROVIDES THESE ESSENTIAL ADVANTAGES:

Greater tank capacity with less weight of tender and lower center of gravity ✓ ✓ Cast steel tank bottom forming strong unitary tank structure results in greatly reduced maintenance costs ✓ ✓ Solves problem of corrosion.

Tenders with Commonwealth water-bottom frames and equalized swing-motion tender trucks are daily proving their efficiency and operating economies on many railroads.

GENERAL STEEL CASTINGS CORPORATION

EDDYSTONE, PA. COMMONWEALTH PRODUCTS GRANITE CITY, ILL.

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879.

MINER

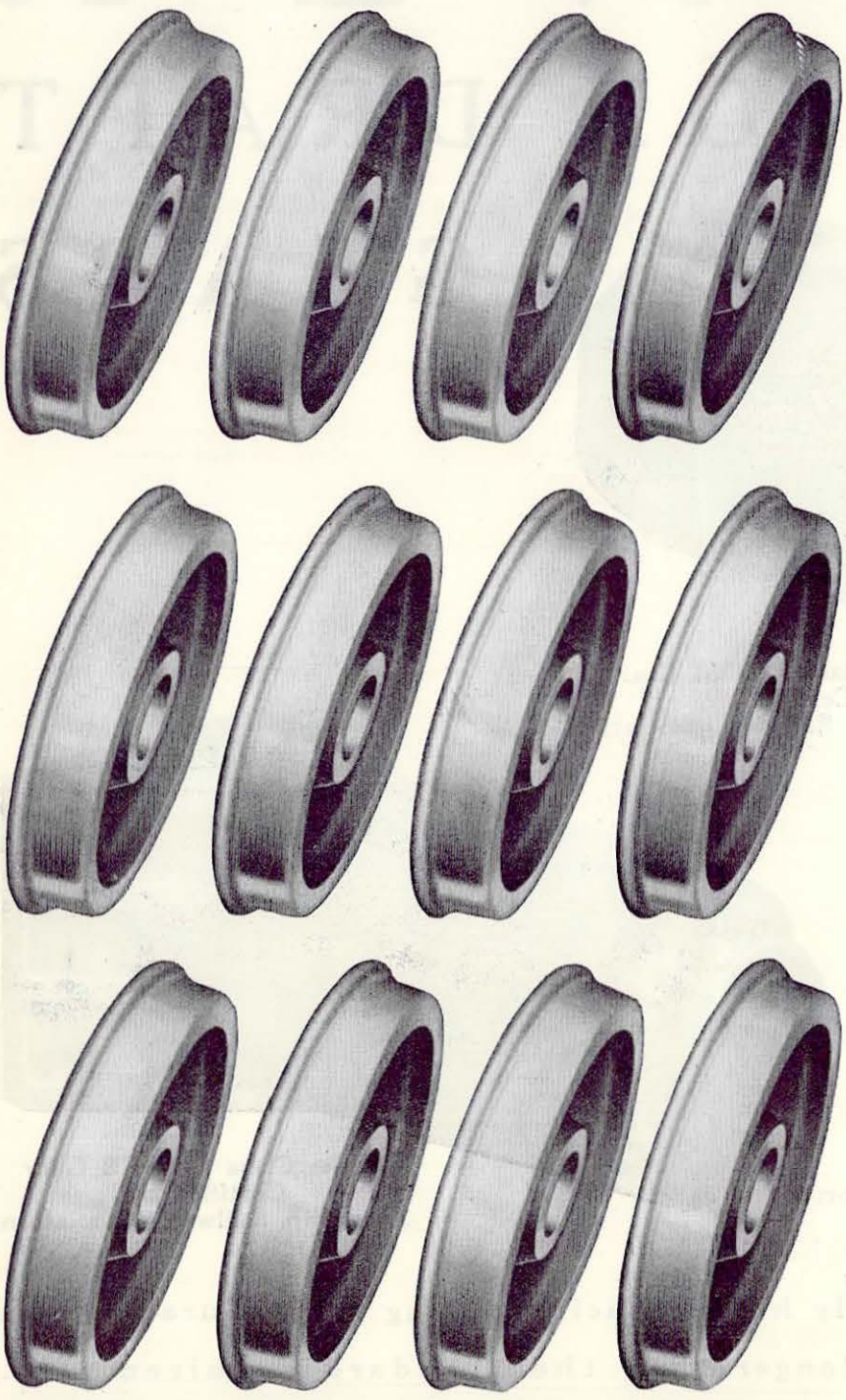
FRICTION DRAFT GEARS

Miner Class A-2-XB Gear
Certified by
American Railway Association

Miner Class A-22-XB Gear
Certified by
American Railway Association

These devices are great achievements in mechanical design and metallurgy. They not only conform to American Railway Association specifications but are capable of sustaining a uniformly high capacity during an endurance test continued many times longer than the standard requirements. Miner Draft Gears are worthy of the confidence extended by the many railroads who know from experience that these devices produce maximum long term efficiency in the most severe service.

W. H. MINER, INC. CHICAGO



WHEEL PROFITS TALK

$

FRANKLY, we want your heavy-duty wheel orders . . . because we know that Armco *Heat-Treated* Wheels assure you plus-mileage and low replacement costs. Experience shows that they keep payloads moving long after ordinary wheels have rolled onto the scrap heap. The steel is pre-tested and sound. Then, to insure high yield point and adequate tensile strength, Armco Wheels are *heat-hardened and oil toughened*. That means more payloads, extra dollar-miles. Still, there is only one way to find out how Armco Heat-Treated Wheels can be figured in terms of actual profits for your road . . . Invite us in to discuss your wheel problems.

ARMCO

WHEELS • SHEETS • PLATES

for *thrifty* railroads

ARMCO RAILROAD SALES COMPANY

Subsidiary of
The American Rolling Mill Co.

Executive Offices: Middletown, Ohio

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 95 September 2, 1933 No. 10

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This is Article No. 7 of the Traffic Development Series; it points out how railroads have experienced favorable results from extensions of rail service with bus service but finds that, where buses replace trains, economies are present without evidence of increased traffic.

Will Lighter Freight Cars Save Money for the Railroads? 339

A. F. Steubing presents a dollars-and-cents estimate of the effect of weight reduction on car ownership and train-operating costs.

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Tells of work involved in placing column footings for post-office extension in congested, intensively-operated area at Pennsylvania Station, New York.

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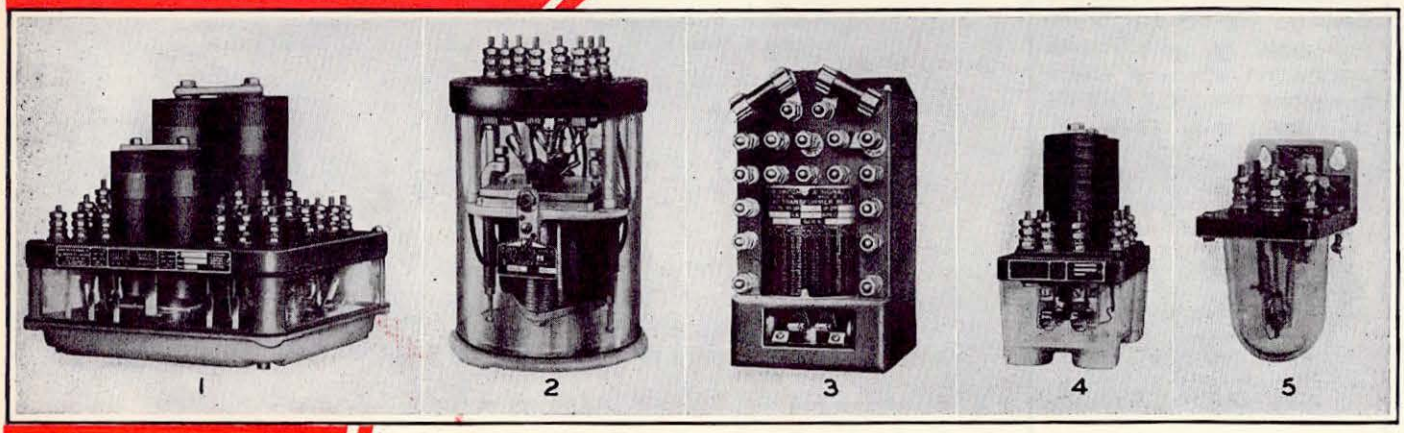
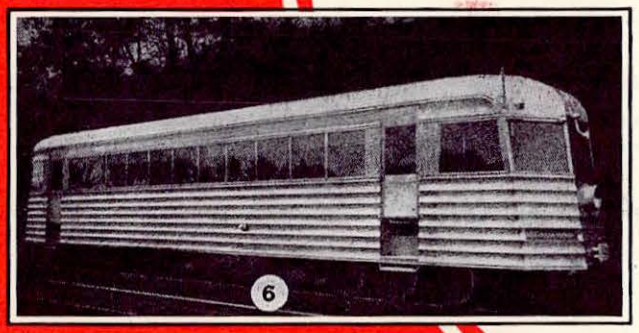
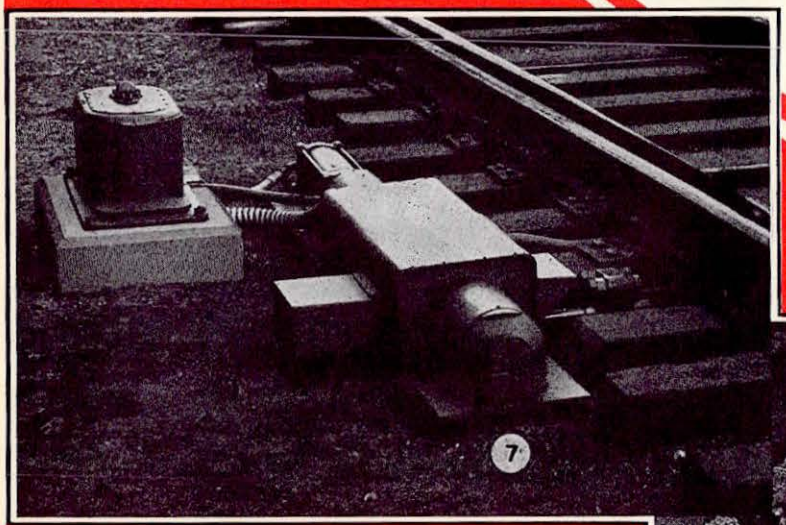
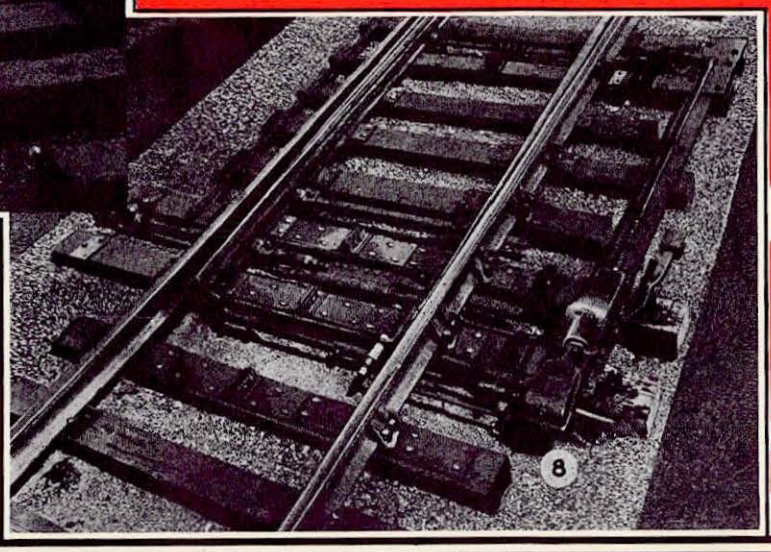


A Partial List of New "UNION" Apparatus

1. DP-20 Retained Neutral Polarized Relay.
2. NF-2 Flasher Relay.
3. ANL-40 Transformer Relay.
4. DN-22 Neutral Relay.
5. TH-10 Thermal Relay.
6. Shunting of Track Circuits by Light Weight Cars.
7. A-5 Electro-Pneumatic Switch and Lock Movement.
8. S-1 Mechanical Facing Point Lock for Spring Switches.







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SAN FRANCISCO

Accelerated Traffic with Increased Safety....

A lower cost per traffic unit is the insistent demand. One method of meeting this demand is to accelerate traffic and increase safety.

"Union" engineering and research must be continuous to provide you with the signaling systems and apparatus required to help accelerate traffic and increase safety.

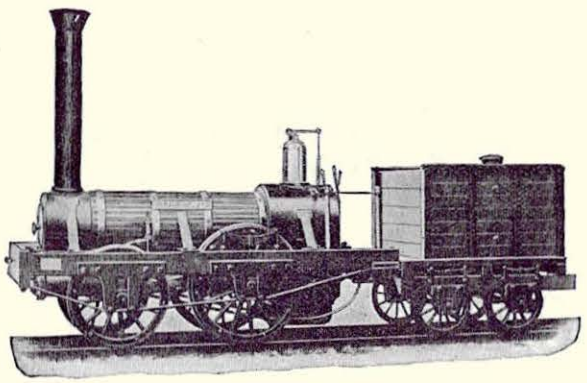
The result of such continuous development engineering is evidenced by the apparatus produced during the past year, some of which is illustrated.

You expect a signal system to be reliable; to be safe; to be economical in first cost and up-keep and to give good, long-life service. When you specify "Union" systems and apparatus all expectations are met.

Union Switch & Signal Co.
SWISSVALE, PA.

1881 1933

"A CENTURY OF PROGRESS"



OLD IRONSIDES

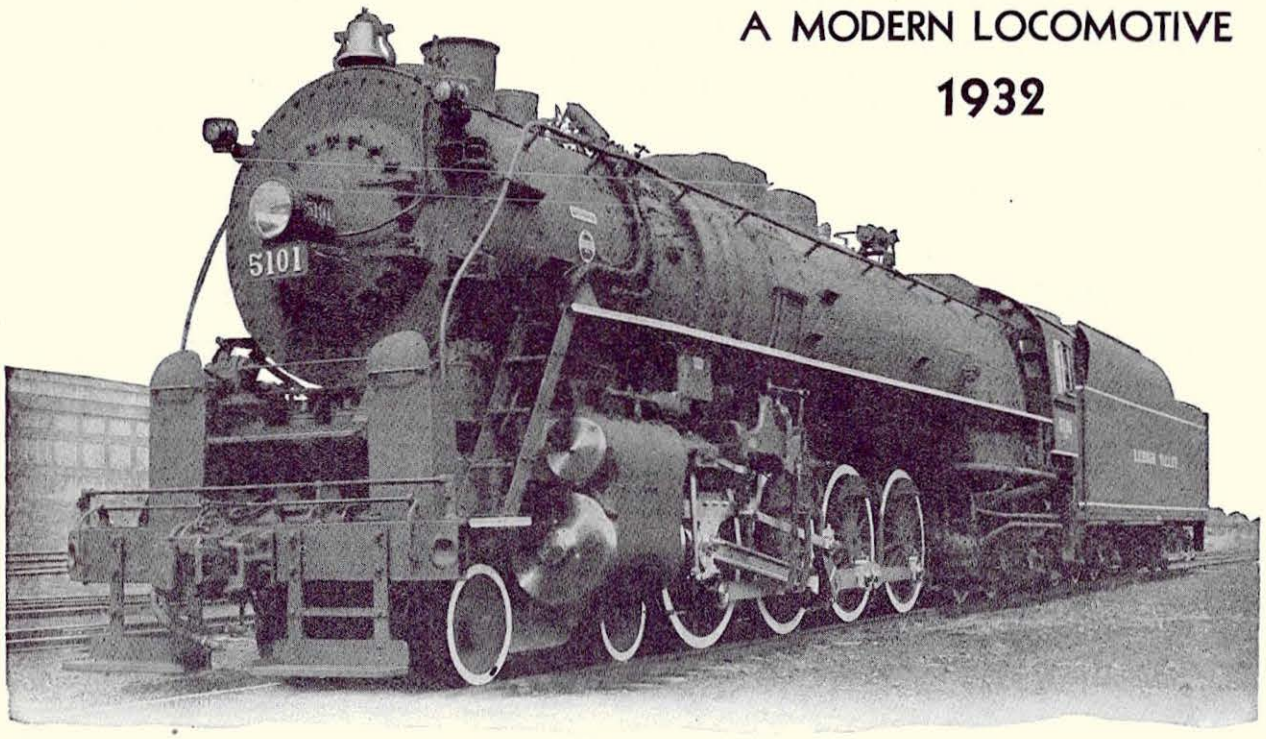
1832

But at no time has locomotive progress been more revolutionary than during the past twelve years.

Locomotives built prior to that period are economically obsolete.

A MODERN LOCOMOTIVE

1932



It takes Modern Locomotives to make money these days!

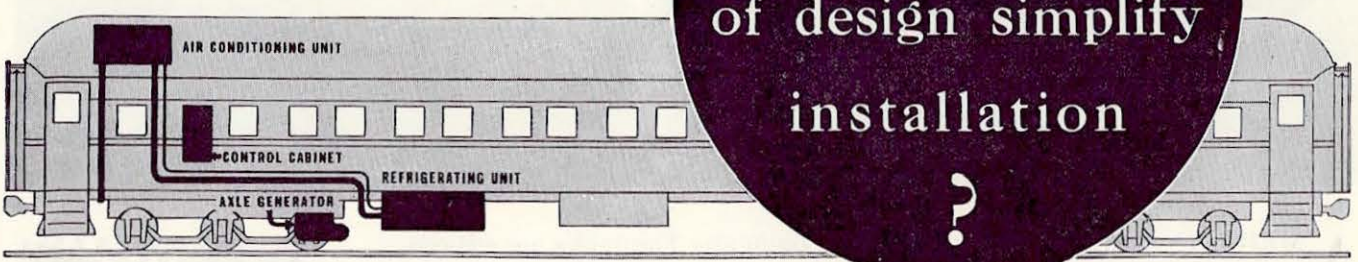
THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

BEFORE YOU BUY AIR CONDITIONING—

Ask this question

★ What specific features of design simplify installation ?



Westinghouse provides complete Air Conditioning Equipment, from rail to roof, that is easy to install.

INSTALLATION is a very real factor. It may cost you much or little depending upon *how* the equipment is built. Westinghouse reduces this cost by giving you these important features:

1 Each unit is completely assembled and tested at the factory.

2 The air conditioning unit requires no major car alterations.

3 The refrigerating unit bolts underneath the car and only two pipes and motor connections are necessary.

4 The axle generator is mounted on a car axle and tested at the factory, ready to be fitted into the truck.

5 Controls are extremely compact and fit into standard car lighting control cabinets.

Railroad problems have been Westinghouse problems for 50 years. This intimate understanding of requirements is responsible for so many features which make for easy installation.

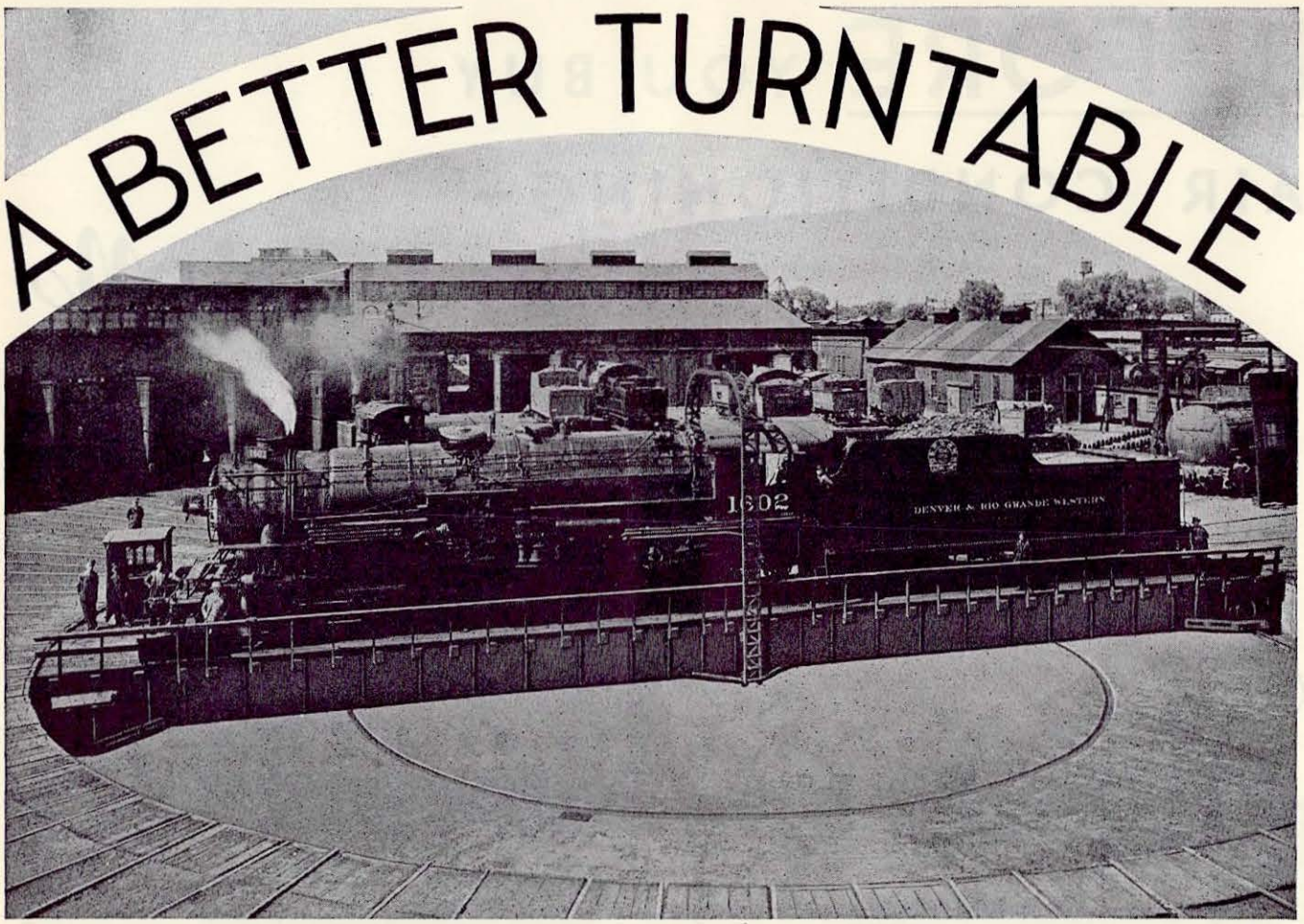
And what about operating costs? Operating experience shows that an increase of one-third to one-half passenger per car per day will pay *all* costs of operating this system.

★ *One of a series of vital questions which should be asked by railroad officials and engineers before buying air conditioning equipment. A complete set of answers to these questions can be obtained by writing to Westinghouse Electric, Room 2-N, East Pittsburgh, Penna.*

Westinghouse T 79602

Quality workmanship guarantees every Westinghouse product

A BETTER TURNTABLE



AMERICAN Bridge Company Standard Continuous Turntables are self-contained machines, designed with due consideration for the dynamic effect of suddenly applied loads and proportioned for typical locomotives within the given length of each table.

Operating mechanism, being mounted on end trucks, increases the tractive force and avoids danger of wheel slipping. Continuity of structure across the center makes possible the use of relatively shallow girders which, being firmly braced together, give extraordinary transverse rigidity and strength and unvarying alignment of table rails with approach rails. Much longer locomotives can be turned on a given length of table. No time lost in balancing. No separate tractors or latches required. Shallow pits cost less for construction and maintenance and are easily drained. Other advantages and economies. Full information on request.

Fabricators and Erectors of All Classes of Steel Structures: Bridges, Buildings, Towers, Sub-stations

US STEEL

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

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ABC

Contracting Offices: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City.

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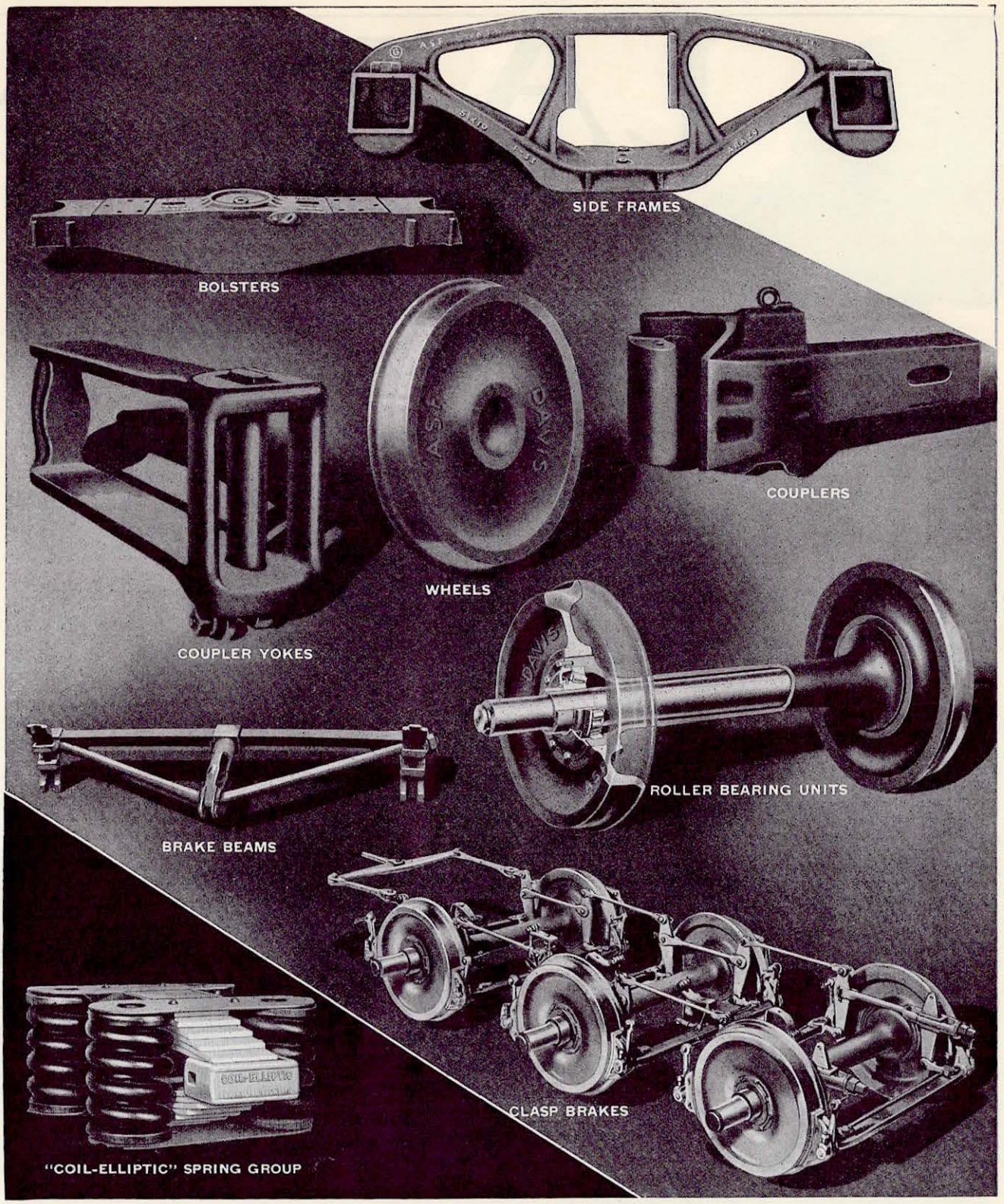


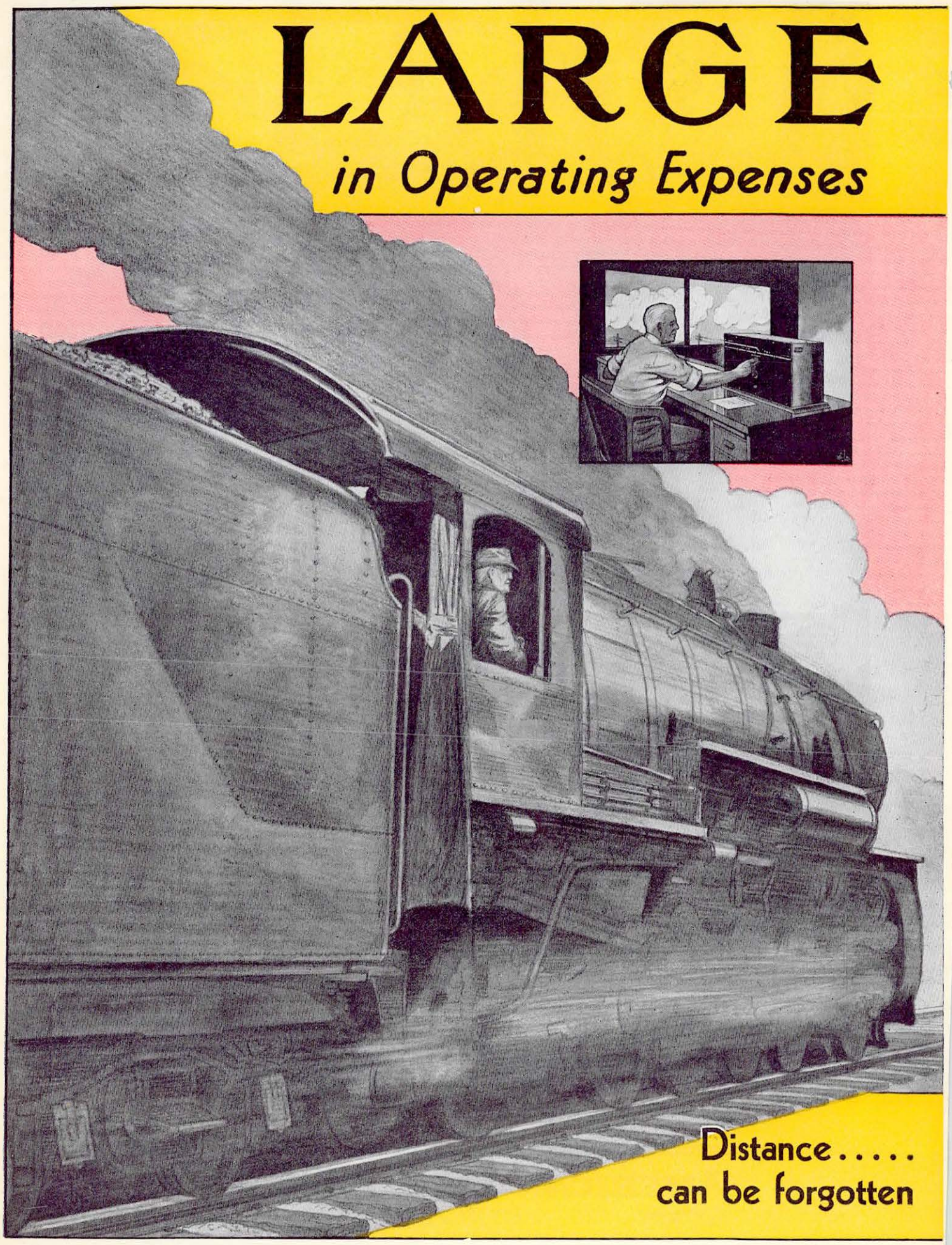
PRODUCTS OF THE AMERICAN STEEL FOUNDRIES WHICH HAVE MADE TRAVEL ON THE AMERICAN RAILROADS SAFER, MORE DEPENDABLE » » » MORE COMFORTABLE

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

LARGE

in Operating Expenses



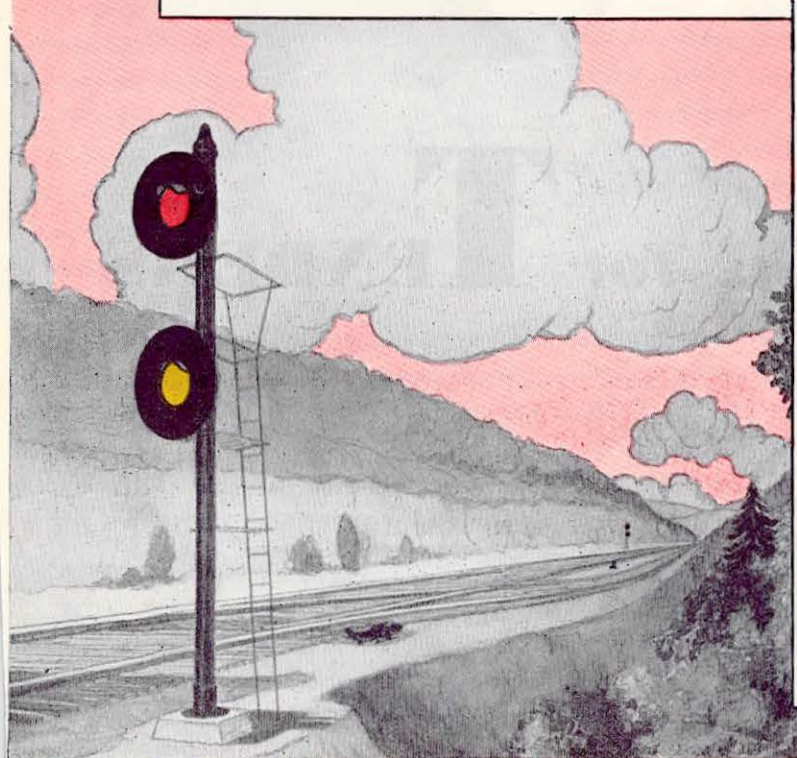
Distance.....
can be forgotten

SAVINGS
Effected by Remote Control

Recent A.R.A. Committee Report Shows Net Annual Returns from 25 to 591 Per Cent

G-R-S Remote Control provides a simple, inexpensive means of operating, electrically, switches and signals at passing sidings, ends of double track, crossings, junctions, yard approaches, drawbridges and similar layouts several miles distant from a convenient control point. In other words, G-R-S Remote Control provides the facilities of an interlocking plant without the expense of an interlocking station.

Consult our nearest branch office about the many possibilities for economy with G-R-S Remote Control.



A. R. A. Signal Section Report On 14 Remote Control Installations

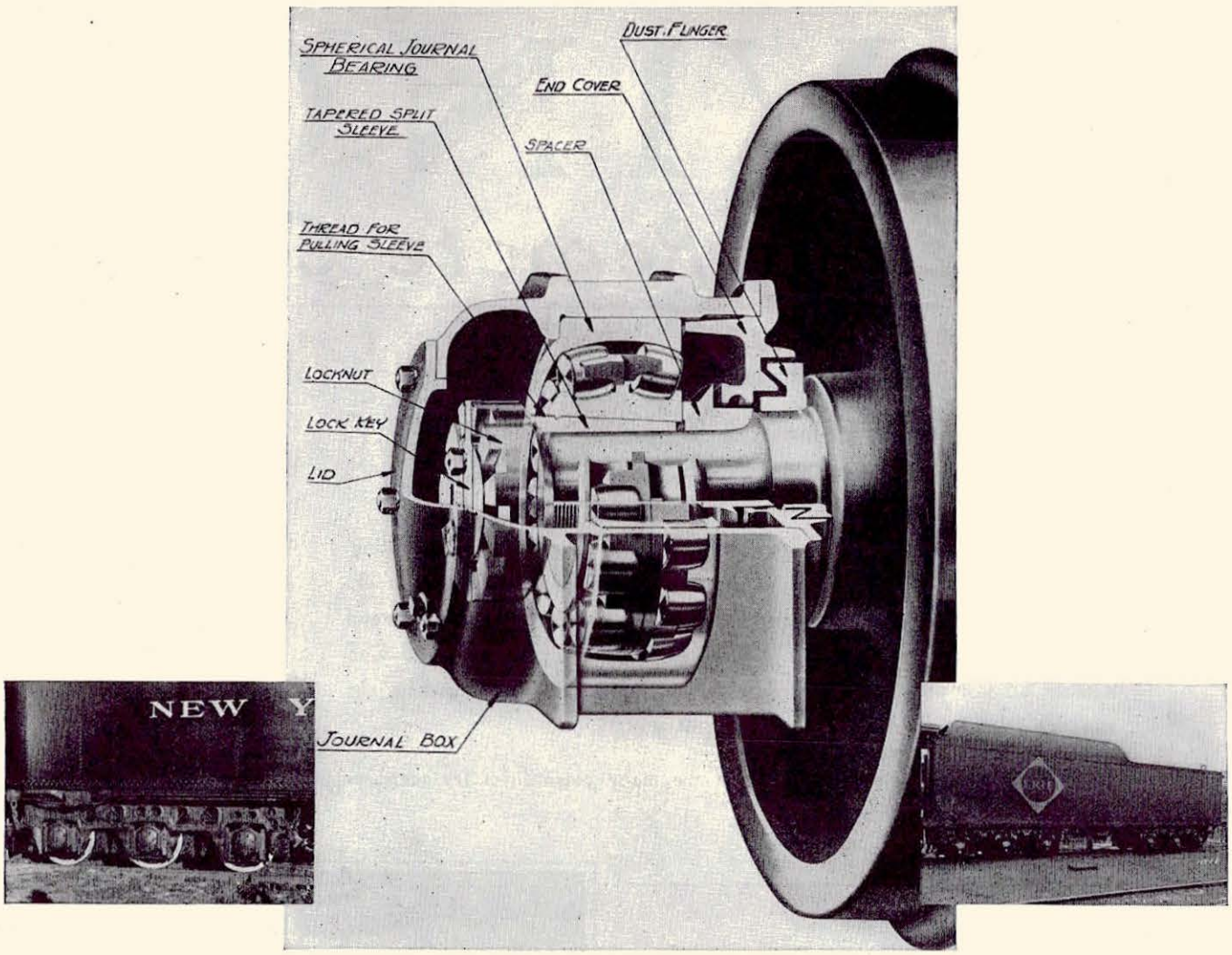
	Number of Switches	Total Cost of Installation	Net Saving Per Year	Net Return Per Year on Total Cost
1	4	$10,425.	$ 3,756.	36. %
2	4	404.	2,418.	591. %
3	4	16,306.	3,997.	25. %
4	1	11,607.	8,370.	72. %
5	1	14,570.	4,774.	33. %
6	1	37,200.	14,465.	39. %
7	4	27,500.	31,855.	116. %
8	2	26,000.	7,128.	27. %
9	5	17,664.	4,396.	25. %
10	2	18,000,	7,000.	39. %
11	—	17,900.	5,000.	28. %
12	1	6,277.	8,894.	142. %
13	2	15,000.	4,400.	29. %
14	1	5,100.	4,712.	92. %
Total		$223,953.	$111,165.	
Average		$ 15,997.	$ 7,940.	50. %

GENERAL RAILWAY SIGNAL COMPANY

ROCHESTER, NEW YORK

Affiliated Companies' Offices: New York, Chicago, St. Louis, Montreal, London, Paris, Tokyo, Madrid, Melbourne, Calcutta, Buenos Aires

A-1170



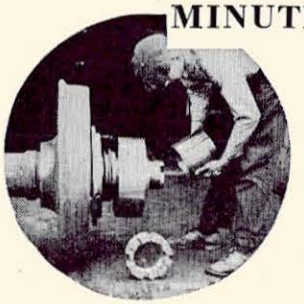
TOUGH *Bearings for* TENDERS

• Tender bearings must be tough to stand up under the hard work they are expected to do mile after mile in daily railroad service. Reliability and the ability to take continuous punishment without failure are demanded. Maintenance costs must be kept as low as possible.

• All these highly desirable advantages are a tall order for anti-friction bearings to meet, yet SKF Journal Bearings have been doing it for years on the leading railroads of this country.

• SKF Journal Bearings can take it for they are tough and rugged without any sacrifice of smooth, easy running. Hundreds of thousands of miles on tenders and other rolling stock have proved this to be so.

Tapered sleeve permits bearing to be
REMOVED
in
30
MINUTES



SKF
JOURNAL BEARINGS

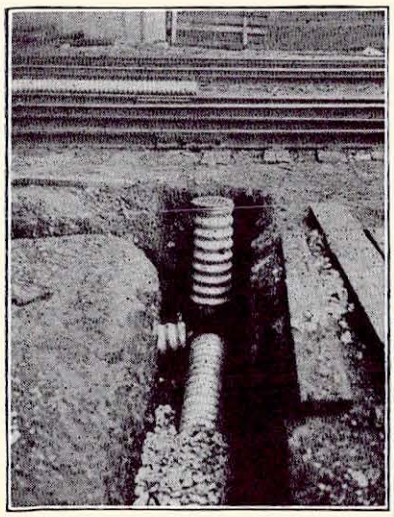
• Long life is also a characteristic feature of SKF Journal Bearings. From shopping to shopping they show practically no trace of wear . . . and they never require adjustments. Inspection is easily accomplished and the tapered sleeve permits the bearing to be removed in thirty minutes should this be necessary.

• Each and every one of these features is a factor in keeping down operating costs, and on that basis . . . nearly 100,000 SKF Journal Bearings are now in world-wide use. 3091

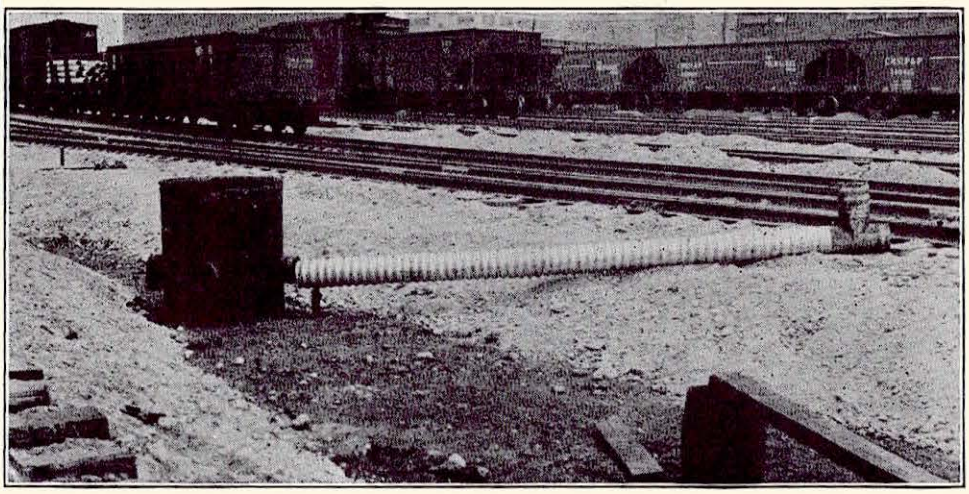
SKF Industries, Incorporated
40 East 34th Street, New York, N. Y.

Look to ARMCO

for Connections and Special Fittings for Railroad Drainage Systems



Typical arrangement of surface inlet. 8"x8"x6" tee with 8" drain riser and cast iron grate.



Typical Armco catch basin and inlet for lateral drains in service in one of the yards of a Western trunk line.

RAILROADS can simplify and speed up installations of culverts and subdrains by the use of sturdy, dependable Armco fittings and connections. Armco—headquarters for durable drainage pipe—is also headquarters for fittings, corrugated or plain, for complete drainage systems. Where special fittings and constructions are required, Armco can build them to order.

The same care in design and fabrication—the same strength and durability—the same simplicity and adaptability, which have won for Armco corrugated pipe recognition among railroads as a drainage product of highest quality, are in evidence in all standard Armco fittings and connections. The material used is Armco Ingot Iron—Nature-tested 27 years to date.

Armco fittings have been designed to meet all problems encountered in the railroad field. They include:

Elbows	Wyes
Bends	Crosses
Tees	Increasers and Reducers

Coupling - bands for field connections

Armco is equipped to handle all special constructions—and assist you in solving your most difficult drainage problems. Mail coupon for complete information.

Armco culverts and drains and fittings are manufactured from a product of The American Rolling Mill Company and always bear its brand.

INGOT IRON RAILWAY PRODUCTS CO. • Middletown, Ohio • Berkeley, Calif.

Philadelphia St. Louis Salt Lake City Los Angeles
Minneapolis Houston Portland Atlanta Denver
Chicago Dallas El Paso Spokane

(Member of the Armco Culvert Mfrs. Assn.)

ARMCO
CONNECTIONS and FITTINGS

R.A.9-2

Gentlemen:

Send me latest data on Armco Connections and Fittings.

Name.....

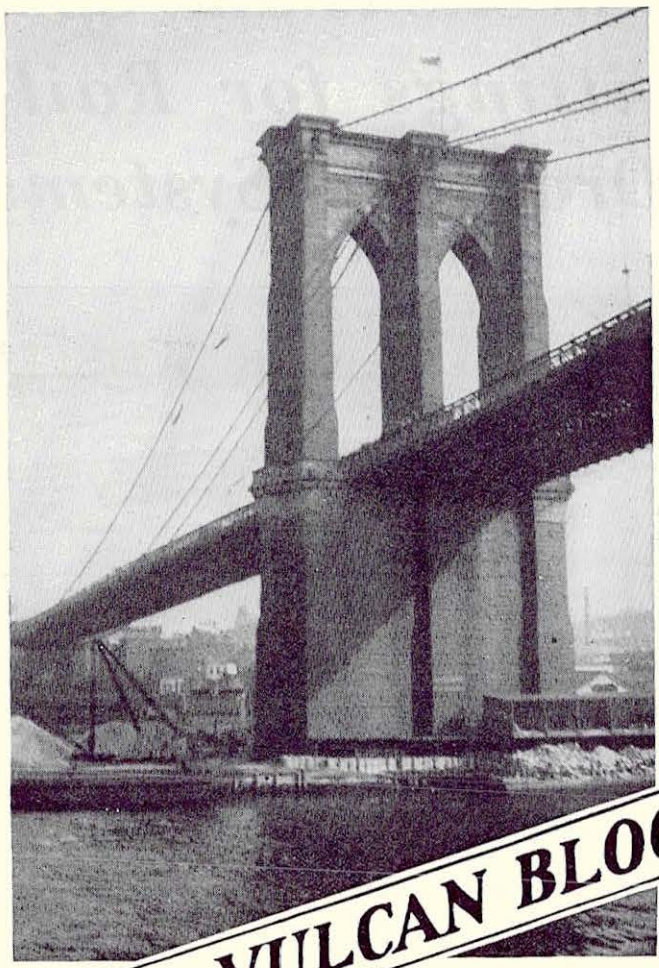
Title.....

Road.....

Address.....

City.....

What Makes a good Staybolt or Engine Bolt?



THE giant suspension cables of the famous old Brooklyn Bridge are of a "built-up" structure, thousands of small wires interwoven make up these massive 18 inch supporting cables.

It is the same "built-up" structure of wrought iron giving a much higher resistance to extreme stress, vibrations, shock and corrosion that make it the most efficient, economical and dependable material available for staybolt purposes,—it is the one and only answer to what makes a good staybolt and Engine Bolt.

There are various qualities of wrought iron —there is a wrought iron of highest quality that has been unchanged for nearly half a century—if you want this quality just

Specify VULCAN BLOOM STAYBOLT IRON

There is a VULCAN IRON for every Railroad Purpose

VULCAN IRON FORGING BILLETS
VULCAN XX ENGINE BOLT IRON

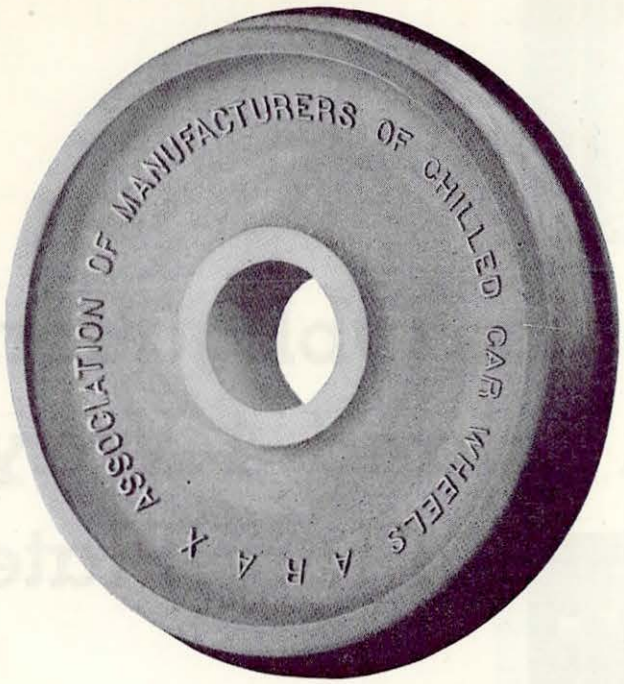
LOCKHART IRON & STEEL CO. PITTSBURGH, PA. VULCAN

LOCKHART IRON & STEEL CO.

Pittsburgh, Pa.

DIRECT MILL REPRESENTATIVES
BLATCHFORD CORPORATION
RAILWAY EXCHANGE,
CHICAGO, ILL.

Illustrating Wheel Progress



Visit our Exhibit, Booth A Group 10, First Floor Travel & Transport Building at the Century of Progress.

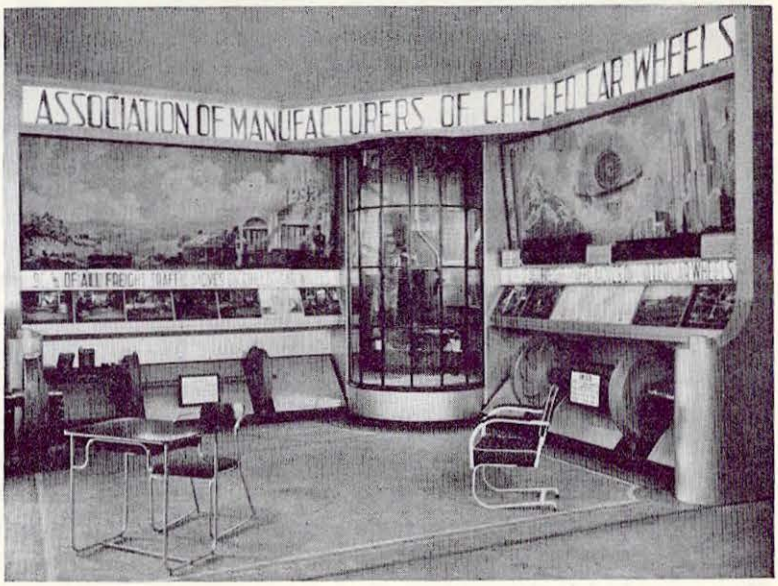
1933 A CENTURY OF PROGRESS CHICAGO

THE PROGRESS OF THE CHILLED CAR WHEEL

is forcefully told in our exhibit at the Century of Progress which is being patronized by thousands of folk interested in the safe movement of traffic.

The members of this Association (listed below) through their research have materially contributed to the advancement of railroading during the past century, keeping in step with the remarkable improvements in car construction and design.

Possessing chemical and physical properties found in no other wheel are reasons why 90% of all freight traffic moves on CHILLED CAR WHEELS.



MEMBERSHIP

1. Albany Car Wheel Co.
2. American Car & Fdry. Co.
3. Bass Fdry. & Machine Co.
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9. Dominion Wheel & Fdries., Ltd.
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13. Louisville Car Wheel & Ry. Sup. Co.
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16. Mt. Vernon Car Mfg. Co.
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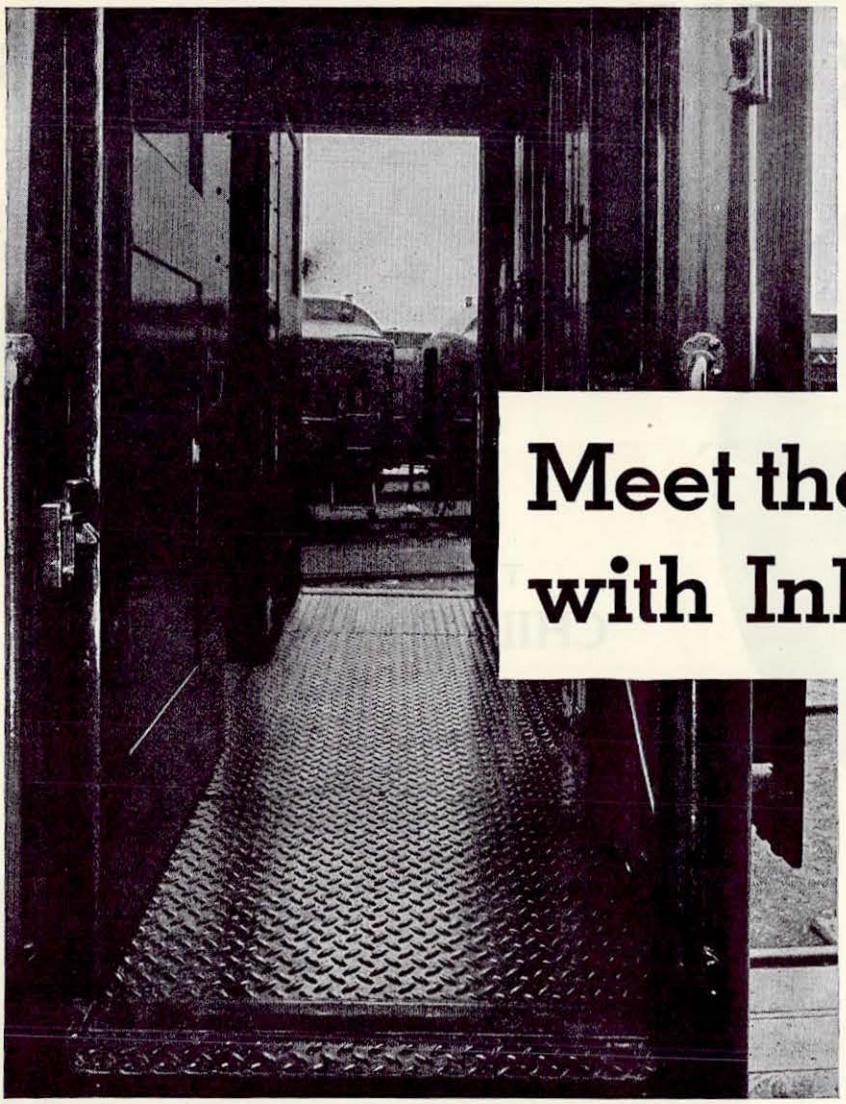
ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS
332 S. MICHIGAN AVE. CHICAGO, ILLINOIS



Meet the Obligation with Inland 4-Way Floor Plate

Inland 4-Way Floor Plate used in the vestibule of a Chicago & Northwestern Railway car

INSTALLING safety devices is an obligation — and good business. The only question is how to secure most safety—how to do the job right.

When it is a problem of traction for feet or wheels — car vestibules and steps, locomotive floors and runways, building floors, platforms, scales, and the like—Inland 4-Way Floor Plate (Pat. app. for) is the answer.

4-Way safety—equal traction in all directions—is assured by the exclusive 4-Way pattern. The projections center one another at right angles, and are higher in the center, providing secure-grip traction points.

Because of this pattern Inland Plate matches 4-ways—practically no waste in securing a continuous pattern. It drains and sweeps easily in any direction. And is the stiffest made because projections overlap, reinforce one another lengthwise as well as crosswise.

Start reducing the cost of accidents now by writing for complete information on Inland 4-Way Floor Plate. INLAND STEEL COMPANY, 38 So. Dearborn Street, Chicago, Illinois.

4-Way Safety

4-Way Matching

4-Way Drainage

Extra Stiffness

INLAND STEEL

ABLE SERVANT OF THE CENTRAL WEST

Sheets Strip Plates
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THE PULLMAN COMPANY
PULLMAN CAR AND MANUFACTURING CORPORATION
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announces
creation of a Research Department
for development of transportation equipment
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of

Mr. E. E. ADAMS, Vice President.

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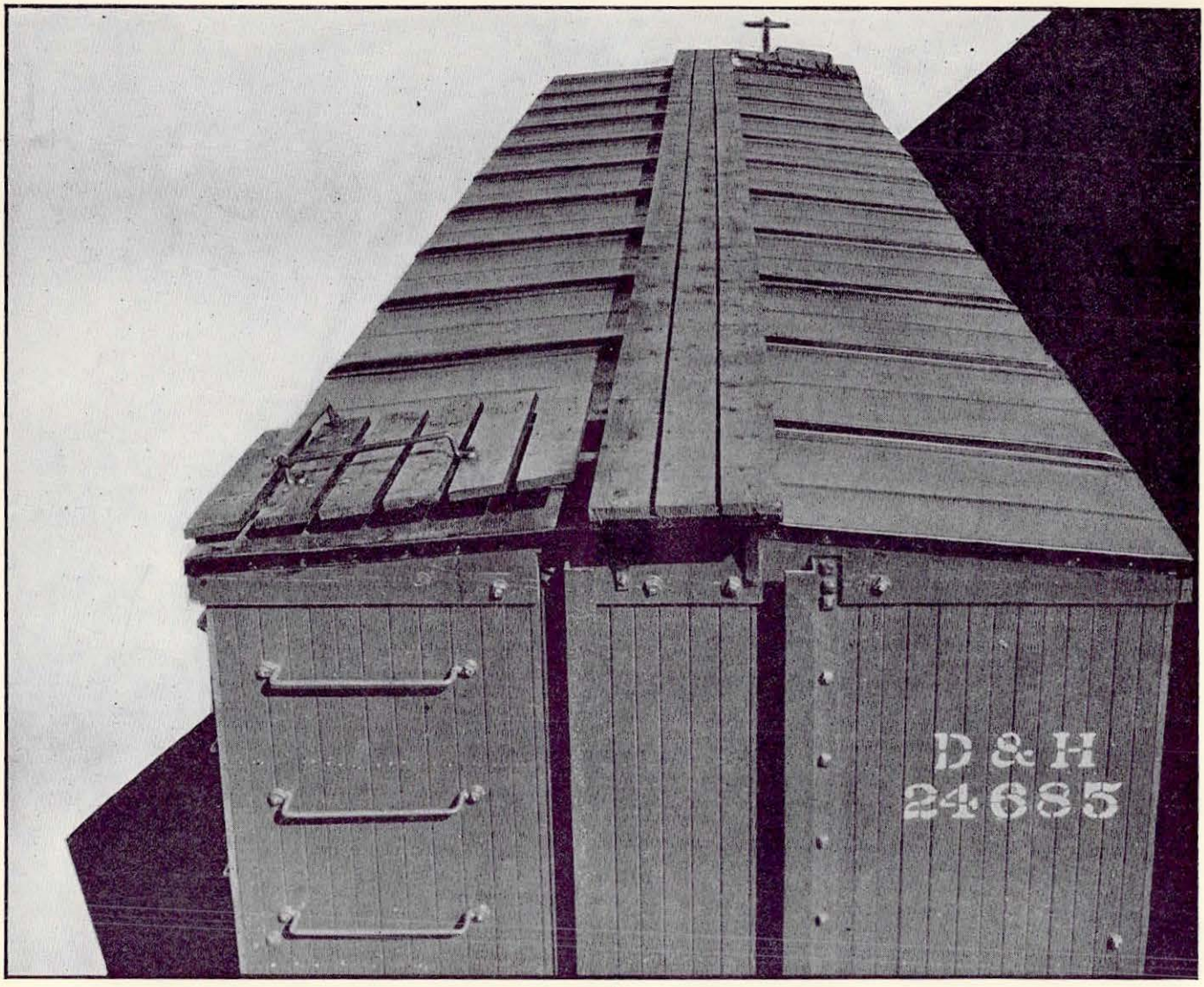


UNIVERSAL DRY LADING ROOF

APPLIED OVER 20 YEARS AGO AND STILL IN A-1 CONDITION

Here is a Universal Dry Lading Roof
Applied July, 1912, over 20 years ago
And still in A-1 condition.

If this roof without maintenance
Gives 20 years of continuous service
On a double sheathed **wood** car
Which car was repaired several times—
How much longer service will it
Give on an **all steel** car?
Probably beyond the wildest dreams.

FIGURE IT OUT FOR YOURSELF.

Hutchins Car Roofing Company

RAILWAY AGE

A Renaissance of Transportation

The largely artificial and nominal prosperity which prevailed in the seven years 1923-1929, inclusive, has been followed by a depression of four years which seems to be drawing toward a close. Whether the student of economics and business believes that the improvement in business which has occurred recently has been caused by the operation of natural economic forces, by the more or less artificial measures emanating from Washington, or by both, there can be no question about the magnitude of an improvement which has resulted in railroad freight car loadings in July and August, 1933, exceeding those of the corresponding months of 1932 by 26 per cent.

The last four years, and especially the last three, have been a period during which in the railroad and in almost every other line of business the thinking and energy of executives have been devoted mainly, and in many cases almost exclusively, to means of effecting retrenchments. With gross earnings at last increasing, both currently and prospectively, in many lines of business, including the railroad business, the time has come for those engaged in these lines of business to think less about the problems of depression, and much more about the problems of industrial reconstruction.

Although business recently has improved, total production and commerce in the United States are still about 40 per cent less than in 1925-1929. That they will attain new high levels within a few years all experience indicates. The extent to which each industry, and the companies and individuals composing it, will benefit from the return of prosperity will depend largely upon the development and sales policies they adopt to meet new conditions.

Competition Between Railways and With Other Carriers

Perhaps no other industry is confronted with more existing and prospective new conditions than the railroad industry. Consequently, perhaps no other industry more needs a new orientation of its thinking and management. In no other industry is it more essential that the psychology of depression shall as rapidly as possible be displaced by the psychology of reconstruction. Existing railroad facilities, operating methods, service and salesmanship have been developed principally upon the assumption that virtually the only competition that had to be met was the competition of other railroads, whereas within the short period of a decade the railroads have become subjected to increased or entirely new competition from other carriers for most of both their local and through business, both passenger and freight.

This necessitates both better selling of the service that they are now able to offer to the public, and radical changes and improvements in facilities and service to provide transportation that will be more saleable. It seems to demand a reduction of the expenditure of money and energy upon competition between the railroads themselves. It clearly does demand an increase in the cooperative expenditure of money and energy by groups of railways, or the railways as a whole, to make more successful their competition.

Cooperation Should Bring Lasting Benefits

The necessity for less competition and more cooperation by the railways was emphasized unavailingly for years by persons who believed that every individual railroad would benefit more by cooperation by all of them to promote the interests of the *railroad industry* than by continuance of competitive practices intended by each to benefit it at the expense of other railways, regardless of the effects on the industry. It is to be hoped that the cooperation now being forced upon the railways by the government will result in changes of railway policy that will be both lasting and permanently beneficial.

Long-established traditions and habits of thinking and acting are, however, exceedingly difficult to discard. This is no more true in the railroad business than in any other, but it is easy to see on every hand evidence that many railroad officers are still thinking more about the competition of other railroads than about the competition of other carriers, although almost every railroad has suffered much more within recent

years from the competition of waterways, automobiles, buses and trucks than from the competition of other railroads. For example, observe the number of passenger ticket offices in many cities and the advertising that is being published by the railroads. No information appears to be available regarding the total rentals and other costs of city ticket offices maintained principally because of competition between the railroads for a passenger business that has declined 60 per cent within a decade, but there are many of them in large cities each of which probably costs approximately as much as the total amount the railroad maintaining it spends annually for the public relations activities it carries on to create a favorable public sentiment in its territory.

Too Little "Selling" of "the Railroads"

The total cost of outside agencies—those maintained by the railways off their own lines principally for competition with other railways—in 1932 was almost $43,000,000. Their expenditures for advertising, amounting to $9,000,000, which included many items in addition to the amounts actually spent for advertising space, were made almost entirely in connection with inter-railroad competition. Information as to the total expenditures made expressly to get people to ship and travel by rail rather than by other means, and to create a favorable public sentiment toward the railroad industry that might affect legislation regarding it and other carriers, is unavailable, but it probably would show that the amount spent to promote needed legislation and to present to the public the advantages of shipping and travelling by rail—to sell "the railroads" to the public—was absolutely insignificant as compared with the amount spent in connection with competition between railroads.

Fair treatment of the railroads, and the advantages of travelling and shipping by rail, must be "sold" to the American people by the railroads collectively by new methods and on a scale which never has even been considered in the past if the railroads are to participate to the extent they should in future prosperity, but if they are to be thus "sold" railroad managements must awaken to a much more lively realization than most of them now have of the amount of brains, energy and money that will be required to do this gigantic job of selling. And yet probably the job could be done with one-tenth of the expenditure of energy and money now made in connection with railroad competition.

Changes in Facilities and Service

With respect to needed changes in facilities and service, the railroads are confronted with an apparent dilemma. They have lost so much traffic to other carriers partly because some other carriers have made lower rates, and partly because some other carriers have rendered more speedy, frequent and convenient service. The ability of other carriers to make lower rates has been largely due to artificial causes—to subsidies received by them from the state and national governments, and to longer working hours and lower wages of their employees. In other words, the relatively lower nominal or real costs of other carriers are secured by exploitation of the taxpayers and of labor. The strongest forces working to stop this exploitation are the associations of taxpayers and railway employees which have been organized throughout the country, and they are entitled to the encouragement and cooperation of the railways.

The removal of the handicaps due to the artificially low costs of their competitors and to unequal regulation would still leave the railways confronted with the necessity of keeping down and reducing their costs and at the same time making radical changes and improvements in their service. They must continue to be, as they have been, the cheapest carriers of passengers and freight, because the national welfare requires cheap transportation, and because transportation by rail must be kept cheaper than by any other means to meet competition. At the same time the speed, frequency and convenience of railway service must be increased, because otherwise transport by highway and air will retain certain advantages which will make them attractive to the public at higher rates than those charged by the railroads.

Competition for Passenger Business

The automobile and airplane are the real competitors of the railways for passenger business, the bus being a factor of declining importance. The airplane has a great advantage in speed. The automobile has an advantage over many passenger trains in speed, and the very important advantage that it can start from any place and be used at any time. The railway has a great advantage in safety over both airplanes and automobiles. Air-conditioning is beginning to give the railways an important new advantage over all other passenger carriers. Passenger coaches are being improved in numerous ways, especially their seats. The Pullman Company is steadily improving sleeping cars in numerous ways. But how much advertising is being done, or is going to be done, by the railway industry as compared with the automobile industry to make the traveling public realize the advantages of travel by rail and to actually want to travel by rail—not on this or that particular railroad, but on any railroad?

Nobody can study the schedules of passenger trains generally, however, without realizing how much the speed and frequency of most passenger train service must be improved if it is better to meet automobile competition for both short and long distances. In spite of the speeding up of passenger trains within recent years, the plain fact is that the speed of most passenger trains is too slow as compared with that of automobiles operating on hard-surface highways, and in many cases this is due to the needlessly long stops made at stations. The high-speed, light-weight trains being built by the Union Pacific and the Burlington

promise to help solve this problem. There is also promise in the greater use of single unit cars as a means of increasing the frequency of passenger service without increasing its cost.

Trucks Service Versus Railway Service

Excepting the automobile, the truck is the most formidable competitor of most railways. This is due not only to the fact that the costs of truck transportation are made artificially low by subsidies and low wages, but also to the fact that in many cases truck transportation is more convenient than railway transportation because the truck can be loaded at any time at the door of the consignor and be moved rapidly and directly to the door of the consignee. How long the public will tolerate the movement of large trucks at high speeds over congested highways, with all the cost and danger to the public that it causes, is conjectural. Meantime, among the problems with which railway managers are confronted is that of meeting truck competition with service equally expeditious and convenient; and it is a problem that cannot be solved merely by speeding up freight trains, because this does not eliminate such delays as those incurred in transferring freight from trucks to cars and from cars to trucks at points of origin and destination. The solution of the problem may be found in some of the numerous kinds of equipment being experimented with to so co-ordinate rail and truck service as to make the truck-rail-truck movement of freight virtually continuous. It may also be partly found in railroad freight service rendered with lighter equipment and more frequent trains.

A Virtually New Problem

The principal factors in the problem which must be solved to cause a renaissance of railroad transportation now seem plainer than they did a few years ago. Much in the way of rehabilitation must be done as rapidly as practicable to repair the ravages caused by the terrific reductions of capital and maintenance expenditures made during the last three years. There is need for more unity and energy of action by railroad managements in carrying on public relations, advertising and sales efforts to "sell" to the public the desirability of giving their industry fairer treatment and of using its service more. There must be much investigation, study and experimentation to determine the extent to which "scrapping" and joint use of existing facilities are justifiable, and to determine the best means of increasing the speed, frequency and convenience of railway service, and of railway service coordinated with other kinds of transportation service, while actually reducing its cost. The present railroad problem is, in many important respects, virtually a new one. In fact, it is new in so many respects that it might almost be said that the solution of it is to be found in the answer to the question as to what a Hill or a Harriman would do if he now had the opportunity, incentive and capital to create an entirely new system of transportation.

For a hundred years the railroads of the United States have been so skillfully developed and operated that they have never failed to meet ever-changing conditions. They have been the premier means of land transportation of the entire world, and if governments and financiers will give railway managers opportunity they will continue to make them, as they have been in the past, the premier means of land transportation as respects the service rendered, wages and other conditions of employment, costs incurred, and rates charged. Ten years ago the railways were just beginning to carry on a program of rehabilitation, as a result of which a period of disastrous shortages of transportation and of government operation was followed by a period of the greatest improvement in railroad service in history. The next decade will be marked by a renaissance of transportation, with the railroads serving as the backbone of a great coordinated system far superior to any the country ever has had, if railway managers will develop, and do what we believe they can do to make plain to public, governments and financiers, the policies that good business and the public welfare demand shall be adopted.

Large Savings From Small Expenditures

The economies to be realized from signaling projects of a minor order may seem unimportant when considered individually, but the aggregate annual savings effected by a number of installations of this kind may readily run into large figures. This is illustrated by the experience of the Chicago, Rock Island & Pacific with 175 installations embracing power-operated switches, automatic interlocking, highway crossing protection and some 15 other classifications of signaling projects completed during the past seven years. The total expenditure for these changes and improvements was $572,012 and the net annual savings effected thereby is $457,184, or 79 per cent on the total expenditure. Many of these jobs were comparatively small, the average expenditure being only $3,269, as compared with the average annual net saving of $2,612.

These results have been accomplished by co-operation between the signaling and operating officers in a continual study of local conditions all over the railroad to search out opportunities for making minor improvements or changes to utilize modern signaling facilities to an advantage. During the period mentioned, the Rock Island has also made several extensive installations of centralized traffic control which are producing excellent results in train operation. This road is looking forward to an extension of such facilities, but in the meantime the smaller projects are being pushed to completion.

Is the Motor Coach a Rail-Traffic Builder?

Favorable results from extension of rail service with bus service— Evidence of economy but not of increased traffic, where buses replace trains

THE motor coach—enemy or ally? For more than a decade, the motor coach has occupied a prominent place in the transportation picture as an independent competitor of the passenger train. But for nearly as long, it has also been utilized by more and more railways as an auxiliary measure, co-ordinated with train service, to combat highway competitors and to meet the conditions arising from the decline in railway passenger business.

Motor coaches have been utilized by railways in two principal ways: To operate on highways paralleling railway lines for the purpose of replacing or supplementing train service, and to operate beyond the railhead to carry passengers closer to their destinations in cities or to convey them to more remote places in resort regions. It is well known that some motor coach systems and lines in which railways are interested are operating on a profitable basis. It is recognized, too, that the basic purpose for the replacement of train service with bus service has been to effect operating economies, rather than to increase passenger revenue, and this purpose has been fulfilled. But the profitable volume of business being handled by some lines and the economies which others have made possible do not provide an answer to the question of whether motor coaches help to create traffic for the railways, which is the subject of present interest.

Although economy has been the primary object in the substitution of buses for trains, there has been some expectation that traffic volume might also be increased. This expectation of increasing the total travel by the co-ordination of railway train and highway motor coach service has been based upon several beliefs. It has been believed that an increase in the frequency of service, made possible by the fact that bus operation is only about 20 per cent as expensive in out-of-pocket costs as train operation, would tend to attract more passengers from the private automobile to the public carrier, since ready availability of service and convenient schedules are proven aids in traffic development. It has been believed also that the ability of the substitute motor coach to get into the very center of a town, instead of reaching only the railroad station in a perhaps inconvenient location, would likewise be an inducement in favor of the railroad motor coach. Finally, it has been believed that the comfort of motor coach travel, exceeding that of local train travel, in some respects at least, would act as a stimulant of passenger business.

Motor Coaches of the Baltimore & Ohio Carry Passengers from Jersey City to Centrally Located Stations in New York and Brooklyn

Substitution of motor coaches for local trains has been effected by many roads. Outstanding among the operators of substitute highway equipment for passengers are the Boston & Maine, the New York, New Haven & Hartford, the Central Vermont, the Reading, the Pennsylvania, the Baltimore & Ohio, the Rutland, the Central of New Jersey, the Central of Georgia and the Richmond, Fredericksburg & Potomac in the East; the Chicago, Burlington & Quincy, the Chicago, Milwaukee, St. Paul & Pacific, the Missouri Pacific and the St. Louis Southwestern in the Middle West; and the Denver & Rio Grande Western, the Southern Pacific, the Texas & Pacific and the Union Pacific in the West. All of these roads have provided a high quality of motor coach service in replacing trains with highway equipment. The buses are operated on convenient schedules and, as a rule, more schedules are provided by the motor coaches now operated than were provided by the trains taken off. In short, these railways have given to the motor coach a thorough test of its capability as a producer of traffic when operated in local service paralleling railway lines and connecting with through trains.

Results of Substitute Service

What has been the result of this type of motor coach operation from the standpoint of railway traffic? Have these motor coaches brought revenue to the railways operating them which the railways would not have enjoyed if they had continued the operation of their local passenger trains instead of substituting buses for them? The consensus of the passenger traffic officers of most of the railways which have substituted buses for trains is that the highway equipment, under conditions which have existed in recent years, has not been effective in definitely stimulating an increase in travel on these local lines. The depression in all business which has existed

since 1929, and which has caused a large decrease in all kinds of travel, unquestionably has been a factor in the failure of these substitute motor coaches to develop additional traffic. The four years of depression through which the country has passed are almost equal in length to the history of many of the railroads' motor coach operations. For this and for other reasons, most of the railways have hesitated to state a final conclusion as to the traffic-developing qualities of substitute motor coach service, but the general opinion at the present time seems to be a negative one.

The passenger traffic manager of one railway says, "The results of one or two bus experiments of this sort, which we have made, are not sufficiently conclusive to enable us to furnish the information desired." An officer in charge of the bus operations of another railway says, "During the greater portion of the time in which our motor bus service has been in operation, we have been in the throes of the business depression, the influence of which has undoubtedly been such as to make of little value any comparison of business now handled by the motor bus services together with the existing rail service, and that handled by the old railway service alone. We are of the opinion that, through the use of the bus service, we have prevented the growth of competing bus agencies." Another passenger traffic manager says, "We have no figures which would show that the co-ordination of rail and motor coach service has increased the total travel. Under normal conditions, figures might be presented; but with the decline in business that has existed, there is no way in which an actual increase could be shown."

The Southern Pacific's Experience

The experience of the Southern Pacific is described in some detail in the following statement by F. E. Watson, assistant to vice-president, system passenger traffic:

The public is not inclined to look favorably on an arrangement to use one type of vehicle to a given point and then transfer to another type in order to reach its destination. For instance, if they board a bus at an intermediate point and make a connection with a steam train at a given location, they prefer to continue on the bus rather than to change from the bus to the steam train. The situation on the Pacific Coast is further aggravated because bus lines are independently owned. The railroads, under present laws, are not permitted to establish stage lines when it is shown that the established independent operators can perform the desired service. Under such situations, the employees of the bus line performing the substitute service are constantly soliciting for through bus movement the passengers who propose to use the bus part way and the train the rest of the way. [This is a condition which does not exist where a railway subsidiary performs the substitute service.—Editor.] The result is a loss of business to the railroad rather than an increase in business.

The Missouri Pacific Operates a Large Number of Motor Coaches which Supplement or Replace Train Service

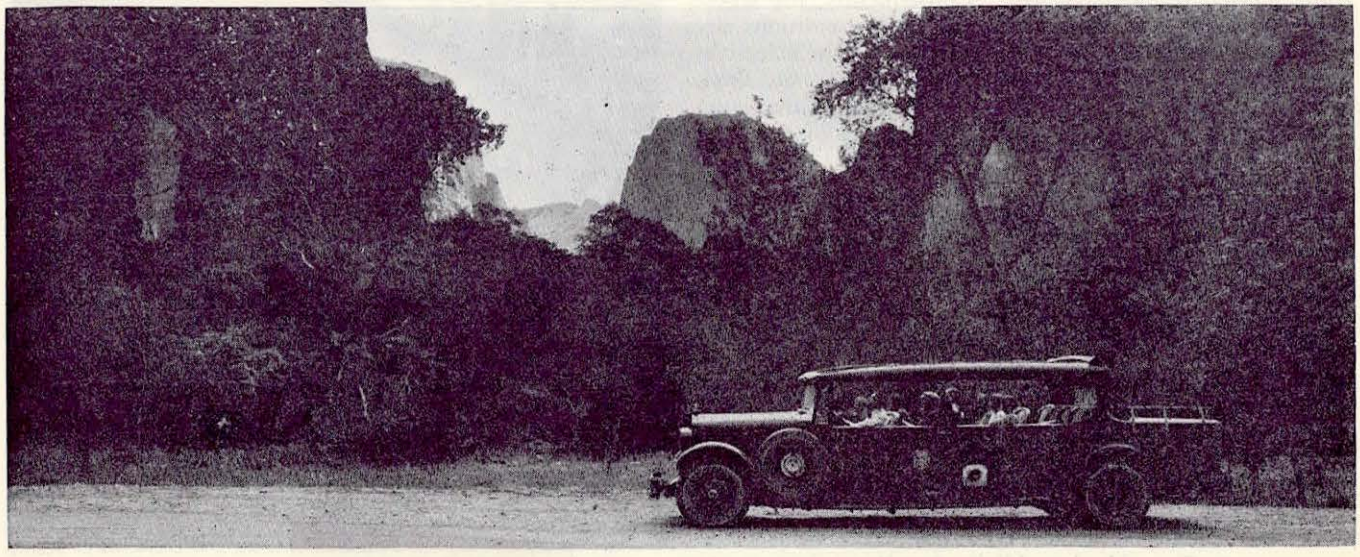
Numerous branch line substitutions have been undertaken by the Southern Pacific, whereby the service on the branch is handled by a substitute bus service, and a very handsome operating saving has been achieved through this substitution. On the other hand, the loss of business has also been very severe due to the fact that passengers boarding the bus will continue on the bus through to destination rather than change at the junction point from the stage to the railroad. One illustration of a most marked type indicates the trend:

Comparison of Business to and from Napa Valley Points before and after Bus Substitution

(July, 1928, and January, 1929, compared with two months in 1932)

	Prior to Substitution		Subsequent to Substitution		Per Cent Dec.	
	Pass.	Rev.	Pass.	Rev.	Pass.	Rev.
To San Francisco and Points South via San Francisco	48	$103	25	$72	48%	30%
To Points East, South and West via Crockett	365	2,248	49	219	86½%	90%

From the experience of these railways, then, it would



Union Pacific Motor Coaches Open the Way to the Utah National Parks

appear that the motor coach has not yet proved its ability to increase business on lines where it has been substituted for local train service. There are a number of extenuating circumstances, however. It must be remembered, first of all, that lines of this sort are the ones which have been most subject to the competition of private automobiles. It is the short-haul business such as that solicited by the substitute motor coaches into which the private automobile has made the deepest inroads. The second thing to remember is that the basic reason for the substitution of these motor coaches for train service was not to bring about an increase in traffic, but to effect a large reduction in operating expense, providing only necessary service at the lowest possible cost. The experience of the railways is uniform in showing conclusively that the cost of motor coach operation is much less than the out-of-pocket cost of train operation. If these motor coaches have not accomplished all that was expected of them in one way, therefore, they have at least fulfilled their principal purpose of reducing largely the expense of providing necessary transportation service.

Data on Substitution Buses Inconclusive

Finally, the evidence concerning the effect which substitution buses have actually had on the traffic volume is not conclusive. Perhaps the business handled on lines where motor coaches have replaced trains would have been even less, under a continuation of train operation, than it has been under bus operation. There is no way of knowing that motor coaches have held business that might otherwise have been lost, but there is likewise no way of knowing that they have lost as much as continued train service would have lost. Consequently, the whole question must remain unanswered until conditions are sufficiently normal to permit a fair test of the effectiveness of the motor coach's comfort, convenience and flexibility in developing local traffic. In the meantime, however, there is no question as to the economy of this type of equipment.

In the Issue of September 16

Being virtually the only public carriers offering sleeping accommodations to travelers, the railways occupy a most advantageous position in the solicitation of passenger traffic. How can the railways take better advantage of their Pullman service? The next article in the Traffic Development Series, which will be published in the *Railway Age* of September 16, will go thoroughly into this question.

Proof of Traffic-Producing Qualities

The other way in which motor coaches are being used by railways is in the extension of operations beyond the railhead, whether in cities or in resort regions. Here, a different story is to be told of the traffic-producing qualities of the motor coach service. There is no doubt that the availability of motor coach service in this type of operation has materially benefited the railways providing it.

The Baltimore & Ohio is the outstanding example of a railway which uses motor coaches to extend its railway service from a metropolitan railway station to points more conveniently situated with respect to the sources of passenger traffic. Much publicity has been given to its motor coach service from the B. & O. passenger station at Jersey City, N. J., to several off-rail stations in Brooklyn, N. Y., and on Manhattan Island. Having no rail access to New York, the B. & O. has availed itself of motor coach service to provide a convenient means of carrying its passengers to and from Brooklyn and Manhattan Island. This operation, which has been in effect for a number of years, has been completely successful. An officer of that railway says, "It is our conviction that our business into and out of New York has benefited very materially from the establishment of the co-ordinated bus and train service".

Motor coaches likewise give access, especially in the scenic regions of the West, to points which cannot be reached by rail. Outstanding examples of this are to be found in southern Utah and Arizona, where motor coaches run from the railhead into Zion National Park and to the north rim of the Grand Canyon; in New Mexico where it is possible for passengers on transcontinental journeys to leave the trains for one or more days and penetrate the interior points of historic and scenic interest by motor coaches and automobiles; and in Yellowstone, Glacier and other national parks where motor coaches likewise open the way to sections which cannot be reached by rail.

How Rail Traffic Is Increased

It is obvious that motor coaches, in giving access to regions which otherwise could not conveniently be reached from the railway lines, have brought about a substantial increase in railway travel. Probably it would not be overstating the case very much to say that a large part of the entire passenger movement in these motor coaches operating "off the beaten path" represents traffic which the railways would not otherwise have been able to secure.

In other words, there would be no inducement for a passenger to travel on the Union Pacific to southern Utah if there were no available motor coach service to take him into the territory which is the object of his trip. Although statistics of the volume of business handled by these motor coach lines, and reflecting the volume of business which they have helped to create for the railways, are not available, observation alone affords ample proof that in this type of service motor coaches are definitely traffic builders for the railways.

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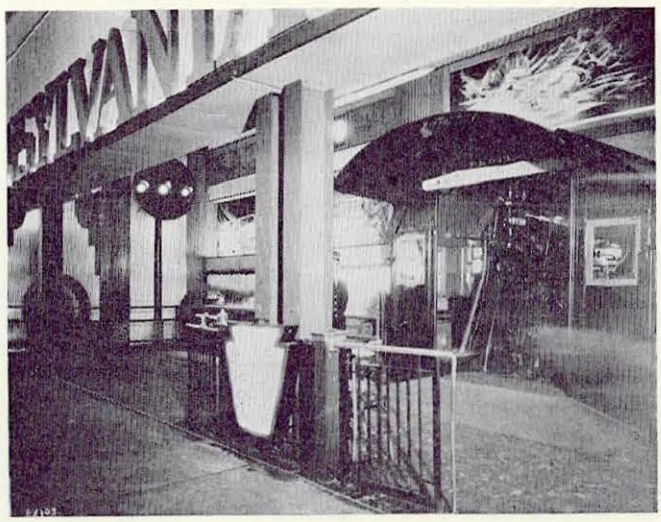


A Locomotive Cab Is the Central Feature of the Pennsylvania's Exhibit at the Century of Progress Exposition—Murals and Dioramas of Scenic Spots on the P. R. R. Are Background of the Space

How Forwarding Agency Provides Co-ordinated L. C. L. Services

Universal Carloading & Distributing Co. handled 1,900 million pounds of freight during 1932 using rails, highways and water lines

CO-ORDINATED services for l.c.l. freight, involving an effective utilization of rail, highway and water transport agencies, is provided by the Universal Carloading & Distributing Company, the freight-forwarding subsidiary of the United States Freight Company. During 1932, the Universal handled some 4½ millon shipments, varying in weight from one to 20,000 lb. and approximating a total weight of 1,900 million lb. Rail shipments involved were forwarded in 52,000 box cars and "thousands of containers" moving over most of the country's larger railroads. Total freight charges paid to railroads and other transportation agencies were more than $19,000,000. At the present time, with the rise in traffic, the business of the Universal is approaching 300 million pounds of freight a month.

Stations in 70 Cities

Such is the magnitude of this company's business which in little more than a decade has developed to a point where its operations reach practically every section of the country and its customers, in 1932, numbered well over 100,000. It has stations in some 70 cities and from these, as concentration points, it serves smaller communities in surrounding areas.

The status of the Universal with reference to the railroads is that of a shipper. Its business is to collect l.c.l. shipments from different consignors, combine such shipments into carloads, and ship in the name of the Universal to itself for distribution at destinations to the consignees for whom the shipments are intended. The forwarding agency finds its compensation and profit in the difference between the carload and l.c.l. rates. This difference, effected by securing the application to the forwarder of the carload rather than the l.c.l. rate is divided between the Universal and its customer in any agreed proportion. Tariffs or rate cards showing charges made by Universal are published for distribution to customers, and to the extent that the customer secures the carriage of his property at a lower rate than the l.c.l. rate, which would otherwise be applied, he saves money.

Where the Universal provides automatic store-door service the customer is usually charged the full railroad l.c.l. rates and the inducement offered is a store-door pick-up or delivery free, or at a rate lower than the customer could himself contract for such service.

All Transport Agencies Utilized

The Universal reserves for itself the right to select transportation agencies; in effect it holds itself out to prospective customers to cause certain commodities to be transported between designated points. Thus, for example, its New York-Texas business is moved by water. The great bulk of its shipments are, however, handled by rail. Trucks were originally used only in pick-up and delivery services but the company finally entered into some contracts with inter-city truckers, in order to hold business which might otherwise have been lost. It was found that this business was leaving the railroads anyway and the Universal, by its contracts with the truckers, retained for itself the traffic, a large part of which it has of late been able to return to the rails by reason of recently-established all-commodities carload rates. The Universal, as a general policy, contracts with established operators for any local pick-up and delivery or over-the-road trucking which it may require. Before contracts are entered into, however, the contract truckmen are required to provide themselves with adequate cargo, public liability and property damage insurance. In addition the Universal carries cargo insurance in responsible companies covering all freight handled by it, via rail or water, thus affording the company and its customers double protection against all shipping hazards.

Average Loading 16 Tons Per Car

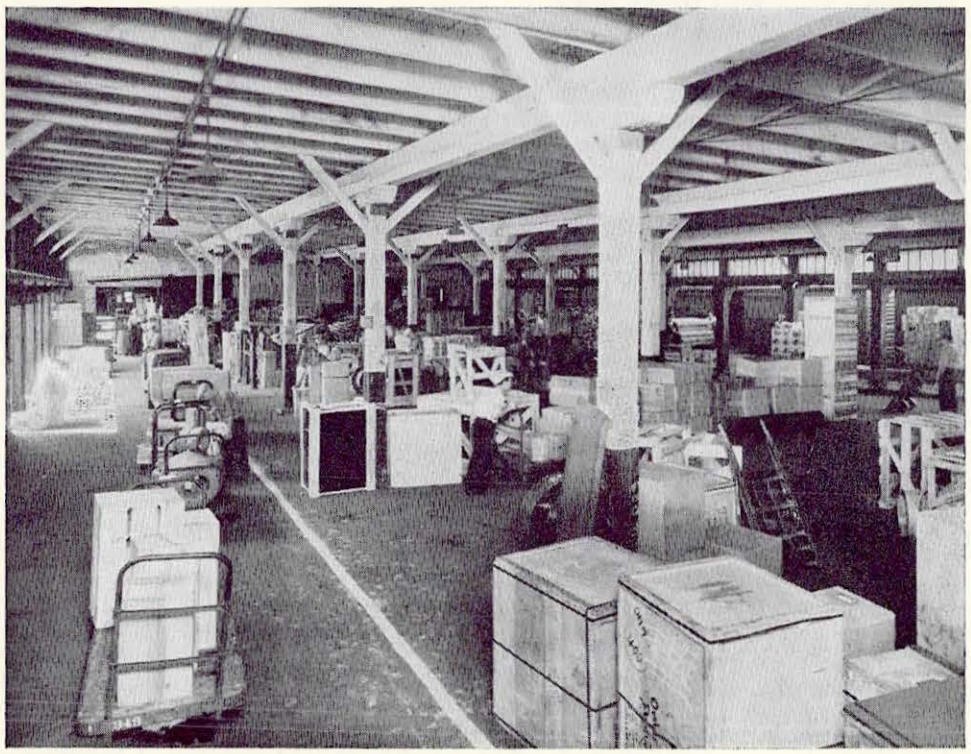
As stated in the foregoing the great bulk of Universal shipments moves by rail and, because of this, the forwarding agency has developed an operating technique which provides an interesting study in efficient utilization of railway equipment and economical handling of l.c.l. freight. With the railroads attaining an average load of about three tons per l.c.l. car, the average load of the 52,000 box cars forwarded by Universal in 1932 was over 16 tons. Universal officers point out in this connection that, in order to make a profit, it is necessary to load cars to the minimum provided in the classification, otherwise profits are absorbed in paying for the vacant space in the car; i. e., the railroad receives the minimum charge provided in the classification and its

A Universal Station at Cleveland, Ohio

tariffs, regardless of the amount of freight in the car, and if the car is loaded over the minimum the railroad receives the tariff rate on the actual weight.

Rents Facilities from Railroads

The Universal conducts its own offices and freight-handling facilities at points where it operates, in many instances such facilities being rented from the railroads. Like other carload shippers it loads and unloads cars except at certain points, such as some New York City stations, where "carrier disabilities" have made it expedient for the railroads to perform this work for all shippers. The details of classification, billing, receiving and receipting for the large number of small shipments, rating, collection of charges, details of claims, tracing and delivery are handled by the Universal with its own forces, thus relieving the railroads of much detail; the railroad uses one bill-of-lading and makes one collection for the handling of the carload.



Interior View of One of the Universal Carloading and Distributing Company's Chicago Freight Houses

A Typical Station Operation

Operations in connection with the forwarding of shipments by rail from one of the Universal's New York stations are typical. This particular station is a section of a waterfront pier on Manhattan Island and is served by car floats from railheads in New Jersey. The normal flow of traffic is known and thus before shipments for outbound movement commence to arrive a number of cars are placed on floats for loading, each car bearing a tag indicative of its destination. For example, the "40" series would be Buffalo cars and car 41 would be Buffalo, all-commodities; car 42, Buffalo, third class; car 43, Buffalo, Rule 26 class, etc. Similarly the St. Louis cars would be the "60" series in which might also be a car loaded with shipments for "beyond St. Louis." These latter would be unloaded at St. Louis and consolidated for further movement with additional "beyond St. Louis" shipments from other points.

A truck arriving with shipments proceeds first to the Universal agent's office where the driver delivers the Universal's bill-of-lading. Immediately a classification expert marks on this bill-of-lading the number of the car into which the shipment is to be loaded and turns the bill over to a checker. The latter is on hand at the tailboard as soon as the truck has backed up to the platform. The freight is then unloaded onto a platform trailer which has meanwhile been tagged with the car number appearing on the bill-of-lading. Tractors then haul these trailers to the proper car where the loading operation is completed and, meanwhile, Universal bills-of-lading are returned to the agent's office for transcribing onto the railroad bill-of-lading for the carload. Very little freight is floored. If traffic is received for destinations to which no car is at the moment being loaded, the freight is nevertheless unloaded from the trucks onto the platform trailers, which latter are parked pending arrangements for final handling.

Co-ordinated Loading Operations

When closing time approaches, a survey of this parked freight, and of that in cars being loaded at several stations within a given area, enables Universal agents, in co-operation with each other, to transfer lading between nearby stations and thus work out the most economical plan for handling a day's business. For example, if a New York station found itself at the end of the day with a lightly-loaded car for Cincinnati, Ohio, it would offer its surplus space in that car to the Universal agent at Newark, N. J., who would despatch by truck to New York whatever Cincinnati freight he had "parked." Likewise a New York station's "parked" freight destined to Kansas City, Mo., when it became evident that there was not enough of it to make a carload, might be sent by truck to Newark, where a Kansas City car awaited without full load. In other words, the most economical set-up is sought; the trucking cost involved in transferring freight between stations is balanced against the cost of paying for "air" in cars loaded below the carload minima.

Inbound business is handled in similar fashion. Freight is unloaded from cars for transfer by platform trucks to the highway motor vehicles which make de-

liveries to consignees. At points where store-door delivery is not provided, the freight is placed on station platforms where it is picked up by consignees' truckmen.

The Universal employs the concentration-point idea to serve smaller communities at which business is insufficient to warrant the operation of a station. Shipments for New Mexico points, for example, are forwarded in consolidated cars to El Paso, Tex., where the carloads are broken up and the individual shipments forwarded to destination in l.c.l. rail freight service or by motor truck.

An additional feature of Universal service is its foreign department with connections in foreign ports acting as import and export agents for manufacturers and merchandisers. Through this department, an exporter or importer may make all arrangements for a freight movement to or from any inland point in the United States to or from any part of the world. Universal handles the transportation to or from the port and arranges the ocean transportation, takes care of all detail of entry or export papers, collects invoices and other charges at either end of the transaction, and assumes full responsibility for the goods until the transaction is completed.

$60,000 Maximum for Executive Salaries

Eastman hopes for further reductions—Lesser salaries also expected to be readjusted downward

WASHINGTON, D. C.

FEDERAL Co-ordinator Eastman on August 25 announced his first railroad economy to be effected as the result of the passage of the emergency transportation act of 1933. He has succeeded in applying the leveling process of the "new deal" to the extent of inducing the railroads, with one possible exception, to reduce executives' salaries to a maximum of $60,000 a year, following reductions already made of about 40 per cent in five years, and expects that corresponding adjustments will be made in the salaries of the lesser officers. This he has done without issuing an order and by merely requesting it, with a suggestion that the law gives him authority to require salary reductions on the theory that salaries too large represent "wastes and preventable expense."

He is not quite satisfied and still believes that $50,000, plus the "joy of creative work well done," a "sense of power," and "public recognition of eminence" is enough for any railway executive under present conditions. However, he is still reluctant to issue an order on the subject, both because the amounts involved are "relatively insignificant" and because to do so would be to go too far in the direction of railroad management to be consistent with the fact that the railroads, though subject to regulation and co-ordination, are still private enterprises. He will therefore leave the matter, with some comments included in a statement given to the press on August 25, to the "good judgment and statesmanship" of the directors of the railroads, with the hope that still further reductions may be made. No indication was given as to how far the salaries ranging down from the top figures are to be regarded as wasteful. That question is to be left to the sense of efficiency of the railroad directors and executives. Nor is there any provision for a readjustment for any executive who fails to appreciate a compensating sense of power after he has put the sliding scale into effect.

The statement was issued for the purpose of reporting the results of the Co-ordinator's request to the railroads, made at his first meeting with the Regional Co-ordinating Committees on July 14, that they consider whether salaries have been reduced enough, in view of the prevailing conditions, and to give his reaction to the action of the regional committees since in bringing about a general agreement to make $60,000 the maximum.

A report compiled by the Interstate Commerce Commission and printed by order of the Senate as a public document shortly after Congress adjourned showed only 26 railroad executive salaries of $60,000 or more on March 1, 1933, as compared with 30 a year before. However, a number of these have since been reduced to comply with requirements of the Reconstruction Finance Corporation as conditions precedent to the approval of new loans or reduction in interest on outstanding loans. It is understood that the R. F. C. directors have approved one or two salaries exceeding the $60,000 maximum now proposed. As of March 1, 31 officers of Class I roads were receiving $50,000 or more as compared with 39 on March 1, 1932.

Practically all executive salaries had been reduced before March 1 but some of the executives of the roads that have felt the effects of the depression less than others had had only one reduction of 10 per cent.

Mr. Eastman's statement follows:

Co-ordinator Eastman's Statement

Under normal conditions I believe that it is best to leave the fixing of salaries to the managements, so long as the railroads are privately owned and operated. Nothing else is consistent with the theory that they can be managed better by private enterprise than by the government. It is the essence of that theory that the self interest of the private owners will insure efficient management, and the selection and payment of officers lie at the very heart of management. If the theory is unsound, there should be a change, but the right change would most certainly not be to create a duplicate public management, in the guise of a regulatory body, alongside of the private management. Only confusion and division of responsibility would result. Public regulation can do certain things well, but control over details of management and operation is not one of them.

Apart from study of the transportation situation with a view to further legislation, I deem it the main function of the federal co-ordinator of transportation to help the railroads avoid the wastes and losses in efficiency which result from the natural failure of independent and rival managements to work well together in all respects. The act gives me authority over all

"wastes and preventable expense," but to follow this mandate literally would mean management, and I am not equipped to manage the railroads. So far, therefore, as the individual affairs of carriers are concerned, as distinguished from matters of collective concern, I regard the power conferred upon me as justified only by the emergency and to be exercised, so far as it can be exercised, in that light.

I have approached the matter of railroad salaries in this spirit. What are proper salaries is difficult to reason out. We live under a social system which in general accepts the principle that as work becomes more difficult and responsible the money compensation should increase. But to what extent should it increase? The operation of the law of supply and demand may be given as the easy answer to that question, but I doubt whether conditions permit that so-called law to have very effective operation in the selection and payment of railroad executives. The only answer that I can give, in the case of railroad salaries, is that they should be no higher than is necessary to secure the right man for the job, and that is not a wholly satisfactory answer.

Money Not the Only Compensation

One thing certain is that money is by no means the only compensation received by a railroad executive, or even a lesser officer. The best compensation of all, in my judgment a much more effective one than is commonly supposed, is the joy of creative work well done, particularly when it involves the element of public service. Lower in rank but very influential is the compensation which lies in the sense of power which such a position carries with it. Public recognition of eminence also plays its part.

Without pursuing the subject further, the point is that there are motives of a higher order which will lead men to accept and seek the most responsible railroad positions, quite aside from the matter of salary. They ought to be cultivated and not undervalued. During the boom period many railroad salaries were advanced to an extent which was not necessary or justified, in my opinion. The effect was to engender public distrust and to lower the prestige of the positions. They were given a money-grasping aspect which impaired their proper recognition as quasi-public positions of dignity, eminence, and service. What was done was characteristic of the times, and the railroads were neither the only nor the chief offenders. Some public utilities and insurance companies are known to have gone further than the railroads, to say nothing of certain industrial companies.

When the depression came, this situation was of course greatly accentuated, and the payment of such salaries at a time when dividends were very generally being suspended, when employees were being laid off in large numbers, when many railroads were borrowing money from the government to escape insolvency, and when some were going into receiverships, produced a very unfavorable reaction throughout the country. Salaries which had been unnecessary became positively wasteful. When the Emergency Act was passed, this situation had been materially improved, but it was still sufficiently aggravated so that I felt it my duty to refer it formally to the regional co-ordinating committees appointed by the carriers under that act.

The regional co-ordinating committees have considered the matter at length and thoroughly and they report that they believe that the railroads of the country, with one possible exception where a definite conclusion is still to be reached, are willing to reduce salaries so that $60,000 will be the maximum, this figure to embrace compensation received from all companies, carrier or non-carrier, included within a system. This corresponds with a peak maximum, within the past five years, of $150,000. This $60,000 somewhat exceeds the maximum which was in my mind. During the World War, when the government was operating the railroads, it utilized the services of some of the most eminent railroad operators of the country, and paid a maximum compensation of $50,000 per year. This was paid to some of the regional operating directors. The maximum and prevailing salary of the chief officials at the Washington headquarters was $25,000.

It is true that officers who were then paid $50,000 did not have some of the responsibilities, particularly financial, which are among the most serious burdens of a private railroad executive. Yet they were performing very difficult service of critical importance at a time when conditions were much more favorable for high compensation than they are now. It was a period of national emergency, like the present, but the country was far more prosperous than it is now, employment was general, and prices were at a far higher level. All things considered, it seemed to me, and still seems, that $50,000 is the most that should be paid under present conditions. In saying this, I realize the difficulties inhering in an established mode of living, not to speak of the income tax, and that undue retrenchment under such circumstances may be reflected upon others than the principal.

It is also a fact that if all the salaries which are now in excess of that level are uniformly reduced to $60,000 and no further, discrepancies will exist which can hardly be justified. If, in other words, $60,000 is made the salary of presidents of very large railroad systems, the same amount should not be paid in the case of certain systems which are considerably smaller. There are a considerable number of chief executives of large systems who are now receiving less than $60,000, and some less than $50,000.

Upon consideration, however, I do not regard the situation as one which justifies an order on my part, for the amounts involved are relatively insignificant. The regional co-ordinating committees have taken my entry into this matter in good spirit. I shall, therefore, leave the matter, with the comments which I have made above, to the good judgment and statesmanship of the directors of the railroads, accepting the assurance, so far as it has been given, that the maximum will be reduced to $60,000 and expressing the hope that still further reductions may be made. I shall leave also to their judgment reductions in the salaries of lesser officers to conform, so far as may be appropriate and just, to those which are made at the top.

40 Per Cent Reduction in Five Years

Figures in my possession show that the maximum salaries during the past five years of chairmen, presidents and vice-presidents, for all class I railroads except a few of trifling importance totaled $13,406,103. The present salaries of similar officers total $8,049,593, a reduction of about 40 per cent. In addition to reductions in salaries, this has been in part due to the elimination of certain positions not now regarded as necessary. In most instances the reductions have been made voluntarily; in others they have been brought about by action of the Reconstruction Finance Corporation; and in a few they have been caused by receiverships or trusteeships. The figures given above do not allow for the further reductions which have been assured.

According to reports from Hyde Park, N. Y., where the President is taking a vacation, he has advised A. F. Whitney, chairman of the Railway Labor Executives' Association, that legal interpretations have been made to the effect that railroads do not come under the provisions of the National Industrial Recovery Act and that it was not the intention of Congress that they should, because they are regulated under so many other laws, but that it is the belief of the Administration that the principles of the recovery act should be applied to railroad employment so far as possible. This view had been indicated by the President at a press conference on August 18, after a committee representing the labor executives had formally asked him to prescribe a code for the railroads unless they submitted a satisfactory one themselves. The reply to Mr. Whitney was sent after the President had referred the matter to Co-ordinator Eastman who had forwarded him a report on the subject. The reduction in executives' salaries may be regarded as one step toward applying the "principle" of the recovery act because it would make it possible for the roads to employ a few more men.

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The Chicago & North Western's Exhibit in the Travel and Transport Building at "A Century of Progress"

Railway Storekeeping Many Sided

Analysis of stores expense reveals extensive scope of present supply service

AN analysis of special reports from 48 railroads on the subject of stores expense brings out three interesting facts about the supply work on railroads. It shows that the variations between the methods by which different railroads administer their supply work and the variations between ideas as to what items of material handling costs should be considered stores expense are large. The reports also show wide ramifications in the railway supply service. They also show the adverse effects of throttled railway purchases and railway consumption of materials upon stores expense.

Stores Expense

Stores expense is an accounting figure which was created for the purpose of distributing properly the cost of supply operations rather than for the primary purpose of determining the cost of handling material on railroads. This distribution is accomplished by taking the cost of all labor, supervision and incidental expense incurred by purchasing and stores forces and calculating its percentage of the inventory value of all material taken out of stores stock for use and applying that percentage to each item of material as it is issued from stock for use. The figure is computed monthly on the basis of estimates of pay-roll and consumption, subject to adjustments which are applied in the following month's figures. Practices today are no different in principle than when stores expense was created, but increasing complexity of the problems of administration and accounting on each road and the increasing segregation of different classes of material-handling expense have made the analysis of reported figures more difficult.

Stores expense in 1925, according to 33 reports, ranged from 2.50 per cent on one road to 9.34 per cent on another road, while the average for the roads reporting this figure for eight consecutive years was 5.69 per cent. The corresponding figures reported for 1929 vary from 1.95 to 10.14 per cent, while the average is 5.69 per cent. The 1932 figures varied from 3.52 to 15.17 per cent and the average was 8.01 per cent, while the figures thus far available for 1933 range from 3.26 per cent to 14.63 per cent and the average is 8.33 per cent. Stores expense during the eight years averaged 6.53 on these roads. These figures represent the cost of handling the general run of storehouse material, exclusive of fuel, rail and ties, which are usually accounted for in a special manner.

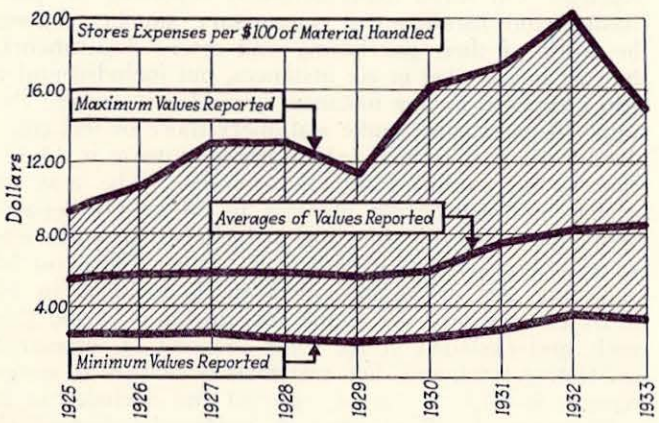


Chart Summarizing Stores Expenses, Applied to Material When Issued as Reported by 50 Railroads

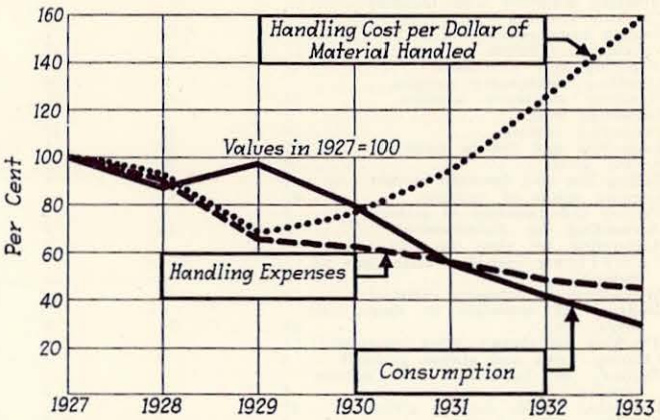


Chart Prepared from the Record of One Railroad, Showing the Difficulty of Keeping Stores Expenses in Line in the Face of Heavy Reductions in Material Consumption. Payrolls Were Reduced 58 Per cent but a Reduction of 70 Per Cent in Consumption Caused a 60 Per Cent Increase in Stores Expense Per Unit of Material Handled

Increases in the cost of stores per dollar of material issued were general in 1929, despite the heavy reductions made in the aggregate cost of maintaining the supply service through reductions in men and rates of pay. This was because of the fact that reductions in the amount of materials used, together with the declines in prices, reduced the total expenditures for materials more rapidly than it was possible or expedient to reduce the organization. Substantial reductions have been made in the unit costs on some roads since 1932, however, while general reductions will occur with increases in the consumption of material.

Supply Service Many Sided

One reason for the higher rate charged for stores expense on some roads than on others is the greater amount of service performed, or the more complete determination of costs. Stores services sometimes consist of new operations and at other times of work, the cost of which was not previously segregated. The separation of supply functions from other types of railway work in recent years, the increasing effort to secure conservation in the purchase, care and use of materials, and the general increase in the rigors of railway management and operation, have all widened the boundaries and enlarged the details of purchasing and storekeeping activities. Reports from 48 railroads of various mileages enumerate among the services performed by purchasing and stores departments many activities which at one time would have been strictly the work of other departments, as, for example, the purchase of coal, stationery, and supplies for dining cars and restaurants, the soliciting of bids for construction work, the sale of lost and damaged freight, the direction of fire-prevention and safety work, and the handling of some insurance. The inspection of ties, lumber and coal are listed among the supply department's work on some roads, and, in

a number of places, the testing laboratory is a part of the supply organization. Accounting work, such as the pricing and vouchering of invoices, accounting for disbursements of materials, waybilling, pricing requisitions for materials issued, accounting for shop pay-rolls and preparing various statements of purchases and stocks, as well as taking and pricing inventories, are now common to supply-department work.

Services Performed by Railway Supply Organizations

Service	Roads reporting	Included with stores expense	Excluded from stores expense
Obtaining bids	2	2	..
Ordering materials from manufacturers	17	17	..
Checking invoices	9	9	..
Pricing invoices	18	17	1
Vouchering invoices	17	15	2
Handling coal purchases	13	..	13
Handling commissary supplies	7	1	6
Handling stationery supplies	22	11	11
Inspecting coal	2	..	2
Inspecting lumber	24	14	10
Inspecting and testing material	11	10	1
Selling scrap	18	18	..
Selling lost and damaged freight	1	..	1
Keeping stocks of supplies	48	48	..
Pricing disbursements of material	6	6	..
Accounting for disbursements	16	14	2
Accounting for shop pay-rolls	4	..	4
Compiling classified statements of material	2	2	..
Waybilling of company material	14	10	4
Delivery of materials to shops, car yards, etc.	24	15	9
Trucking for shops or other departments	10	4	6
Clearing yards and station grounds	6	3	3
Delivery of locomotive and caboose supplies	3	..	3
Operating supply cars or trains	10	10	..
Handling rail and ties	8	..	8
Picking up shop scrap	12	11	1
Picking up roadway scrap	12	10	2
Operating scrap yards	11	7	4
Operating reclamation plants for metals	17	6	11
Operating reclamation plants for car oil	9	2	7
Operating reclamation plants for motor oil	1	..	1
Destroying locomotives and cars	8	2	6
Operating manufacturing plants	6	1	5
Operating drying kilns for lumber	5	1	4
Oil-house operation	25	23	2
Operating lumber saw mill	4	..	4
Operating wood shaping mills	2	..	2
Operating mills for straightening rail	3	..	3
Operating tie-treating plants	3	..	3
Mimeographing and duplicating service	8	3	5
Operating repair shops for office machines	6	3	3
Operating automotive repair shops	1	..	1
Operating ice-manufacturing plants	1	..	1
Harvesting ice	2	..	2
Cleaning freight cars	1	..	1
Generating acetylene	1	..	1
Icing cars	2	..	2
Maintaining fire roads	1	..	1
Handling locomotive sand	1	..	1
Handling mail	1	..	1
Material handling for water softening	1	..	1
Handling shop tools	1	..	1
Oiling machines	1	..	1
Operating cranes	1	..	1

Besides keeping stock and ordering materials for general use and maintaining stock books, keeping records of materials received and shipped, cars handled, etc., many stores deliver materials to mechanics, shops, roundhouses, car-repair yards, etc., and, with the aid of power tractors and trucks, they perform various material-handling tasks for other departments, including the moving of materials from shop to shop and from machine to machine, the spotting of cars, the distributing of oil, the cleaning up of yards and station grounds, etc. The distributive functions include, on some roads, the delivery of train supplies to cabooses and locomotives, the distribution and control of stationery supplies, the delivery of ice to passenger cars and stations, the delivery of coal by truck to way stations and shops, the operation of supply cars and trains, the handling, in some cases, of rail and ties on the line of road, and, likewise, the delivery of men, as well as materials, by truck to section gangs and bridge and building forces.

Supply services now also include the operation of large scrap yards where maintenance of way as well as shop scrap is unloaded and sorted and otherwise prepared for sale or other disposition. They include the operation of plants for the reclamation of metals, of journal packing, of grain doors and of crank-case oil for motor cars. They include rail saw mills, lumber saw mills, wood planing mills, dry kilns, tie and timber-treating plants, and acetylene-generating plants. Store department forces on one road operate a stone quarry and pump water. Many roads operate or supervise repair plants for typewriters and other office appliances, perform mimeographing and duplicating service for other departments and split wood for locomotives. Some roads harvest ice, operate ice-manufacturing plants, clean lamps and lanterns for train service, oil machinery, clean freight cars, unload engine sand, handle mail, care for laundry for bunk houses, provide and service charcoal burners for potato cars, etc., and, in almost all cases, supply forces serve on committees charged with the responsibility of simplification and standardization.

The figures used for stores expense on any road thus depend upon the services performed and also to the extent to which the cost of such services should, in the opinion of the railroads, be included in stores expense. On some roads, the supply work does not extend beyond the purchasing and handling of mechanical stock, and all expenses of the department for labor and incidental materials are considered as stores expense. In other cases, the stores account is relieved of the cost of special functions by adding their cost to the material handled, or charging it direct to the operating accounts affected, as allowed under the rules of the Interstate Commerce Commission. At the same time, the stores expense of many roads is required to absorb certain expenses of other departments for handling material.

It is not practical to itemize the material-handling work of different railroads in exactly the same way. Neither is it practical, in a general survey, to compare the amount of detail involved in the service which different roads designate by the same name. It is possible, however, to indicate the variation in the practice of computing stores expense on different roads by taking those occupations which are listed and showing the number of cases in which the expenses are included in stores expense and the number of cases in which the expenses are excluded. Analyses prepared on this basis show considerable variation in the distribution of expenses for purchasing, particularly as regards the cost of supervision and also the division of office expenses between general materials and fuel and ties.

All general supervision of the purchasing department of one road over reclamation plants and manufacturing plants, including the supervision of ice-manufacturing plants, for example, is allocated to stores expense, while on one small road where the purchasing is all handled through the general manager's office, only the cost of operating the stores department is included in the stores expense. On seven roads definitely reporting the purchasing and handling of commissary supplies among the work of their purchasing and stores departments, the cost is excluded in six instances, but included under stores expense in one instance. In 22 cases where the supply departments handle stationery more or less completely, the cost is included in stores expense in 11 instances and excluded in 11 instances. The cost of pricing and vouchering invoices in 18 supply departments reporting this function is included in stores expense in 16 cases and excluded in 2 cases. The cost of inspecting ties or lumber, or both, is included in 14 of 24 cases where the supply organization handle this work, and excluded in 10, while the cost of inspecting and testing track and shop materials is charged to stores expense in 10 of 11 cases reported and excluded in 1.

The cost of selling scrap is uniformly charged to stores expense in 18 cases reported. Supply organiza-

(Continued on page 345)

Will Lighter Freight Cars Save Money for the Railroads?

A dollars-and-cents estimate of the effect of weight reduction on car ownership and train-operating costs

By A. F. Stuebing

THE railroads are now giving much study to proposals for the use of lighter equipment and to changes from present practice, such as the use of non-rusting material, the substitution of welding for riveting, etc. To estimate the savings that may be effected by such departures from ordinary standard construction it is important to know what decreases in operating costs will result from any given reduction in the empty weight of cars.

In view of the fundamental importance of this question it is surprising to find the available data concerning it so meagre and the opinions so divergent. The writer has heard some men argue that the only saving resulting from a decrease in the weight of freight cars is the reduction in the fuel required to haul them. On the other hand, some have contended that the entire revenue from the increased lading which the car will carry when loaded to the limiting weight should be credited to the lighter construction.

Even a cursory consideration of the elements which enter into the cost of operation will show that neither of these methods is correct. The savings resulting from weight reduction are affected by so many variables that such simple rules as those just mentioned cannot be accurate. Any general method for the solution of this problem must be applied with due consideration for the varying operating conditions in each particular case, otherwise serious errors may result.

Purpose of This Article

When the weight of equipment is greatly reduced, as in the case of some of the recent designs of passenger trains, the operating conditions may be changed to such a degree that the logical method of arriving at the saving is to estimate the major items of expense under the new conditions and to compare them with the present costs for the same items. However, in considering comparatively small reductions in weight this method is not readily applicable. It is proposed, therefore, to set forth the factors which affect the savings due to minor reductions in the weight of equipment and to derive figures based on average operating conditions of the Class I roads.

Some of the data required must be estimated and the limit of error in these items may not be as small as would be desirable for a high degree of accuracy in the final figures. However, in view of the lack of definite information as to the savings due to reduction in weight, the result obtained by this method should be of value as a rough first approximation as to an accurate solution.

While the first cost of equipment and the cost of repairs must be considered in the comparison of total expenses, these will vary with each individual design. Therefore, in this discussion the cost of repairs per car will be assumed to remain constant.

The decrease in operating expenses resulting from a reduction in the weight of freight cars will be greatest when both the lighter and the heavier car can be loaded to the maximum capacity of the axles. In this case a reduction of the empty weight will cause a corresponding increase in the weight of lading per car and the number of cars required to haul a given net tonnage will decrease. In addition, there will be a decrease in the ratio of gross tons to net tons and in the total tonnage hauled.

When cars are operated with loads that are less than their maximum weight capacity, any decrease in car weight will reduce the ratio of gross tons to net tons and the total gross tonnage hauled, but will not affect the number of cars required to haul a given net tonnage. The proportion of the total car mileage which is made with a load equal to full weight capacity is, therefore, important in determining how much is saved by weight reduction.

Likewise, a distinction must be made between the effects when full tonnage trains are hauled and when the train load is less than the maximum which the locomotive can handle. In the first case the reduction of empty weight of the car will result in a decrease in the number of trains as well as a decrease in the gross tonnage. In the second case the decreased light weight will cause a reduction in train tonnage, but the number of trains will remain unchanged.

Under the various conditions outlined above the magnitude of the savings will be affected by the ratio between the loaded and empty mileage, the speed of trains, grades, economy and capacity of locomotives and cost of fuel. The variations in the wages of enginemen and trainmen, except as affected by factors already mentioned, are so slight that they would have little effect.

How to Secure the Data

Some of the data required for an analysis of the savings resulting from a reduction in the weight of freight cars can be obtained from published statistics. The other figures could be obtained by special studies, if it was desired to reduce the probable limit of error. In this case data not otherwise available have been estimated by referring to various reports of railroad operations. In choosing specific data for the calculations in this problem, the year 1930 has been selected because the operating conditions in the next few years are likely to be closer to the level of 1930 than to the extremely low level of 1931 and 1932.

The number of cars loaded to maximum weight capacity is not reported by the railroads. However, this can be estimated from statistics of average carloads for various commodities and territories, in relation to the average capacity of the type of equipment used and the minimum carload weights. In making use of this data it is necessary to assume that the average mileage per trip with load and the ratio of empty to loaded mileage is

uniform for all commodities and is the same whether the cars are loaded to the limit or to less than the weight capacity. The error introduced by making this assumption will be relatively small, because all classes of commodities are included in both the full loads and part loads, and the weight per car and the distance moved are in most cases entirely independent of each other.

The total number of carloads reported for the Class I roads in 1930 was 45,717,079. From a study of the statistics of commodity loading the number of cars loaded to full weight capacity is estimated as 14,800,000, or 32.4 per cent. The average net ton-miles per loaded car-mile was 26.7. The ratio of loaded mileage to total mileage was 61.4 and the average mileage per car was 28.7 per day, or 10,475 miles per year. Each car, therefore, made an average of 6,430 miles loaded and 4,045 miles empty. The net ton-miles per car per year amounted to 171,000. The average empty weight of freight cars was 22.6 tons, making the gross ton-miles per car 408,000.

To show the effect of minor reductions in the weight of freight cars it is convenient to make calculations based on a decrease of one ton in the empty weight of the car, the limit weight, determined by axle capacity, remaining the same.

Under these conditions the maximum weight of lading would be increased one ton. This heavier maximum load would be carried only .324 times 6,430, or 2,100 miles. Consequently the net ton-miles per car per year would be increased to 173,100, or 1.23 per cent. The gross ton-miles per car per year would be 399,600, a reduction of 2.06 per cent.

Because of the increase in the net ton-miles per car per year, the number of cars required to handle a given amount of traffic would be reduced 1.23 per cent. This would effect a saving in maintenance, interest, depreciation and taxes.

The weighted average cost of freight cars in 1930 was about $2,480. Assuming interest at 4.85 per cent (the average rate on funded debt), depreciation at 3.5 per cent and taxes at 1.2 per cent, the fixed charges per car amount to $236.80 per year. The normal average cost of repairs per freight car is about $140, which brings the total expense per car to $376.80, or $2.21 per 1,000 net ton-miles for the ordinary car. With the car weighing one ton less, for the same amount of traffic this cost would be reduced 1.23 per cent, effecting a saving of $0.0271 per 1,000 net ton-miles.

To avoid excessive use of small fractions it will be convenient to base further comparisons on the amount of net ton-miles which would be handled yearly by 1,000 of the heavier cars; namely, 171,000,000 net ton-miles. The number of lighter cars required to handle the same traffic would be 1,000 divided by 1.0123, or 987.8.

Percentage of Trains Loaded to Full Tonnage Rating

It is estimated that 80 per cent of car mileage, whether loaded or empty, is made in trains loaded to full tonnage rating. On this basis the proportion to which the change in car weight will affect only the cost per train-mile and the part which will affect the number of train-miles can be determined. This will be as follows for 171,000,000 net ton-miles:

	Heavier cars	Lighter cars
Gross ton-miles in tonnage trains	326,400,000	319,700,000
Gross ton-miles in trains under maximum tonnage	81,600,000	79,900,000

Considering first the movement in trains of less than maximum tonnage, the reduction in weight would effect a saving in fuel, but this would not be proportionate to the reduction in tonnage because the train resistance per ton is less for the heavier cars. Furthermore, the resistance of the locomotive remains unchanged and this is a considerable part of the total resistance. Data on train resistance indicate that the ratio of reduction in fuel consumption would be only about one-fourth of the ratio of reduction of weight. There would ordinarily be no saving in wages of trainmen and enginemen. The decrease in cost of maintenance of locomotives and track and in other operating expenses would be so slight that they can be disregarded.

The reduction in gross ton-miles from 81,600,000 to 79,900,000 amounts to 2.08 per cent. The fuel consumption per thousand gross ton-miles, excluding the engine and tender, is 138 lb. Taking the fuel saving as one-fourth, the percentage of weight reduction gives a decrease of .52 per cent, or .72 lb. per thousand gross ton-miles which, at the average cost of $2.43 per ton, would amount to $.00088.

The reduction of expenses for the part of the movement made in trains loaded to full tonnage rating can be estimated best on the train-mile basis. In the absence of definite data on the average weight of tonnage trains and the cost of various items of operating expenses for such trains, it will be necessary to base calculations on average results for all freight trains. The error introduced by this assumption should be small because many items of expense are the same for light and heavy trains.

Cost of Moving Freight Traffic

By using the method outlined in the Manual of the American Railway Engineering Association for determining the cost of moving freight traffic, the marginal cost, or the saving that would be effected by the elimination of one train-mile, can be estimated. The calculation should include wages of enginemen and trainmen, fuel and the portion of the following items which vary with the traffic: Enginehouse expense, freight-train supplies and expenses, yard expense, station agents, clerks, supplies, etc., indirect transportation expense, maintenance of way and structures and maintenance of equipment. For the conditions of this problem the saving is found by this method to be $3.56 per train-mile.

The reduction of one ton in the weight of the car would cause a decrease of 6,700 gross ton-miles per car per year in the movement in tonnage trains. This would amount to 3.59 train-miles and, at $3.56 per train-mile, would represent an annual saving of $13.19 per car.

Converting the saving in fuel for the movement in less than tonnage trains to a corresponding figure for one car per year gives $0.15, while the reduction in car-repair costs for the amount of traffic handled by one car would be $4.63. This gives a total saving of $17.97, which is the estimated total annual saving resulting, under average operating conditions, from a reduction of one ton in the weight of the car.

Must Consider Each Case Individually

It should be borne in mind that this result applies only to a hypothetical case and the figures should not be applied indiscriminately, as they are likely to vary considerably from the actual savings for any particular railroad or type of car. Under certain conditions the economies to be expected would be much less; in other cases, the savings may be three times as much as the average. Therefore, each individual problem should be solved by the methods outlined above.

The discussion of the factors which affect the amount saved by a reduction in the weight of freight cars suggests the most desirable conditions for the application of lighter equipment. Where cars are not loaded to the maximum weight capacity and trains are not made up

to full tonnage, the decrease in cost is so small that even a slight increase in the first cost of the lighter equipment might offset the saving. On the other hand, where both car loads and train loads are at the maximum the saving for a given reduction in weight would be considerably greater than the estimated average as calculated above. Therefore, special efforts should be made to reduce the weight of cars used for coal, ore, and other heavy commodities, particularly on roads where, due to heavy grades or other limiting conditions, the train load is small. Even under average operating conditions any reduction in the weight of that class of equipment which can be accomplished without unduly increasing maintenance costs should effect substantial economies which will continue throughout the life of the car.

1933 Car Loading Exceeds That For 1932

WASHINGTON, D. C.

REVENUE freight car loading for the week ended August 19 brought the cumulative total for the 33 weeks of this year up to 17,587,173 cars, an increase of 19,618 cars as compared with that for the corresponding period of last year. The total for the week ended August 19 was 634,845 cars, 12,086 cars more than that for the preceding week and an increase of 116,405 cars over the figure for the corresponding week of last year. It was 113,755 cars less than the loading in the corresponding week of 1931. Grain and grain products, forest products, and l.c.l., showed decreases as compared with the preceding week and grain and grain products, livestock and l.c.l. showed lower figures than those for the corresponding week of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, August 19, 1933

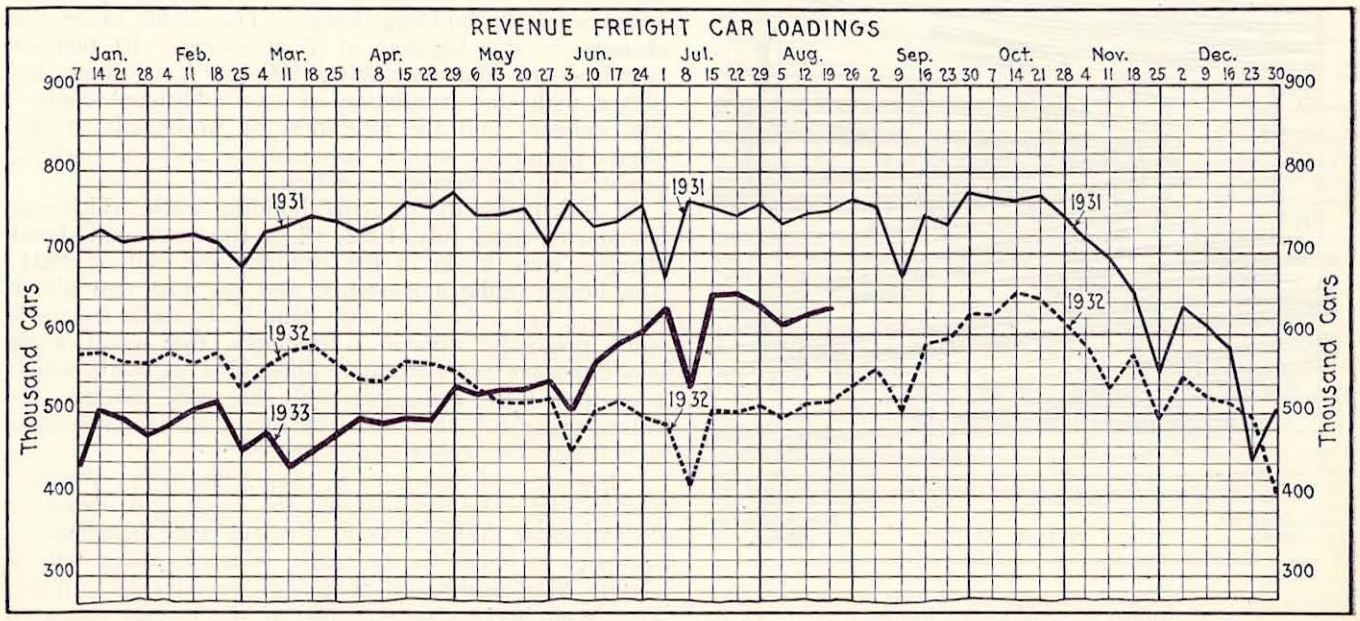
Districts	1933	1932	1931
Eastern	143,239	115,674	164,443
Allegheny	131,128	96,007	147,141
Pocahontas	48,908	36,263	47,358
Southern	84,500	74,695	103,136
Northwestern	94,064	68,635	109,042
Central Western	84,909	84,295	116,847
Southwestern	48,097	42,871	60,633
Total Western Districts	227,070	195,801	286,522
Total All Roads	634,845	518,440	748,600
Commodities			
Grain and Grain Products	28,598	381,146	44,740
Live Stock	17,317	17,623	23,041
Coal	126,317	85,609	118,899
Coke	6,975	2,615	4,363
Forest Products	26,875	15,662	27,235
Ore	37,384	7,231	35,724
Mdse. L. C. L.	168,881	169,636	214,010
Miscellaneous	222,498	181,918	280,588
August 19	634,845	518,440	748,600
August 12	622,759	511,965	743,626
August 5	613,112	496,626	734,730
July 29	638,396	511,103	761,818
July 22	648,914	501,912	742,481
Cumulative total, 33 weeks	17,587,173	17,567,555	24,272,173

The freight car surplus for the last half of July averaged 392,905 cars, a decrease of 11,509 cars as compared with the first half of the month. The total included 215,815 box cars, 117,081 coal cars, 28,193 stock cars, and 11,524 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended August 19 totaled 43,181, according to the compilation of the Dominion Bureau of Statistics. This was an increase over last year's loadings of 3,529 and over the previous week's of 4,537 cars, which raised the index number from 67.10 to 71.48. Grain was particularly heavy, increasing by 2,837 cars over the previous week. Miscellaneous freight declined by 124 cars, but all other commodities showed increases, merchandise being up by 1,007 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Aug. 19, 1933	43,181	18,796
Aug. 12, 1933	38,644	19,141
Aug. 5, 1933	37,775	20,322
Aug. 20, 1932	39,652	14,610
Cumulative Totals for Canada:		
Aug. 19, 1933	1,176,897	597,356
Aug. 20, 1932	1,340,998	636,988
Aug. 15, 1931	1,583,542	868,671

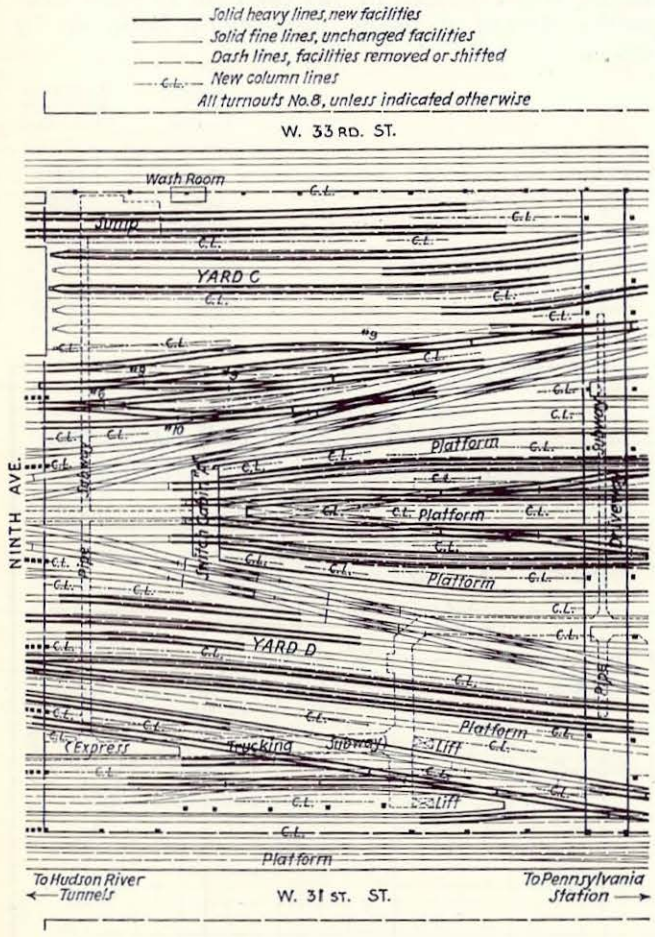


Development of Air Rights Entails Difficult Substructure Work

More than 200 column footings placed in congested, intensively-operated area at the Pennsylvania Station, New York, for post office extension

ONE of the most unusual and interesting building substructure projects ever carried out over railway facilities has just been completed at the Pennsylvania Station, New York City, where an extension to the United States general post office building, approximately 419 ft. long and 455 ft. wide, is being constructed over a congested layout of a dozen or more electrified tracks which handle more than 1,000 passenger train and engine movements daily. In this work, a total of 206 column footings were put down through rock between tracks of close centers, with third-rails carrying 650 volts and overhead trolley wires carrying 11,000 volts. Adding to the difficulties of construction, the track area is honeycombed with sub-surface drainage and express and conduit tunnels, and the rock penetrated, while of good quality, is of widely varying character and severely shattered.

The first floor constructed over the tracks, which was included in the substructure contract, is said to be the heaviest building deck ever constructed in the country, involving girders up to 115 ft. in length and weighing 152 tons each, these being necessary because of the lack of room to permit closer spacing of the column footings.



General Plan of the Station Area Covered by the General Post Office Annex, Showing Track Changes

Many Track Changes

The new post office extension, which, when completed, will be practically a duplicate of the existing five-story granite-faced post office building, extends over the track and platform area back of the station, bounded on the east by the existing post office, on the west by Ninth avenue, on the south by Thirty-first street, and on the north by Thirty-third street, an area of approximately 190,600 sq. ft. Within this area, the level of which is about 50 ft. below that of the streets surrounding it, and which is hemmed in on the sides by high retaining walls, the track layout includes principally the throat to the 25 platform, mail and baggage tracks at the station, with the intricate layout of turnouts and crossovers which this entails; 4 coach tracks along the south side of the area, for holding Pennsylvania trains; and 7 coach tracks along the north side of the area, used mainly for holding Long Island commuter trains.

With track centers of 12 to 13 ft., except immediately at the ends of platforms or between ladder tracks, available space for an orderly arrangement of building columns was practically nil without rearrangement of much of the trackwork. Having before it plans of the existing track layout, the government engineers and the building architects, in conjunction with engineering and operating representatives of the railroad, platted the most feasible column arrangement possible, giving consideration to both the needs of the railroad and practical features of the building design. The result called for changes in the location of 7 crossovers, 10 turnout switches, and approximately 4,800 lin. ft. of track, together with the installation of two additional double-slip switches and the alteration or movement of the electro-pneumatic switch mechanisms and interlocking facilities at the various switches.

In anticipation of the actual building work, which was not started until July, 1932, all of the track and signal changes were made in the summer and fall of 1931. The heavy traffic movements, and the fact that all of the work had to be done with hand tools, made the track work unusually difficult. Similarly, the signal work was extensive and extremely difficult. This work, which was carried out coincident with the track changes, involved principally the movement of the electro-pneumatic switch machines and ground signals.

All track work was done in accordance with a schedule worked out carefully between the track and operating departments. When specific changes were being made, approach switches to the track or tracks taken out of service were blocked and blue flags were locked in place. Watchmen were also stationed at the proper places to

afford full protection to the track forces, and the tower levermen placed tags on the appropriate levers in the tower to indicate clearly which switches and tracks were out of service.

Early in 1932, certain other work was carried out incident to the post office extension, the most unusual and interesting of which was the relocation of certain of the main basement columns under the existing post office building to permit desired platform and track changes. This work, which involved the transfer to new columns of loads up to 1,000 tons, was described in detail in the *Railway Age* for July 30, 1932.

In addition to the difficulty of securing a favorable column layout due to the congestion of tracks, the situation was complicated further by the fact that the track area contained a complete drainage system, and was also crossed by a 12-ft. express trucking subway and several sizable cable ducts. In the drainage system within the area affected, there are two main cross drains of 24-in. cast iron pipe, which collect water from a series of 10-in. cast iron drains, generally paralleling the tracks. Manholes are provided at each pipe intersection, and all of the water collected is brought to a sump on the property at the intersection of Ninth avenue and Thirty-third street, from which it is pumped into the city sewer system. Interference with most of the lateral drains within the interior of the construction area was not considered serious since these drains carry surface water mainly, which will be minimized when the area is covered by the building, but no interference could be permitted with the main cross drains, which are tied in with the track drainage system directly beneath the station proper, or with those lateral drains along both sides of the track cut, which may be called upon to carry seepage water from the higher adjacent ground level, even after the track area is completely covered.

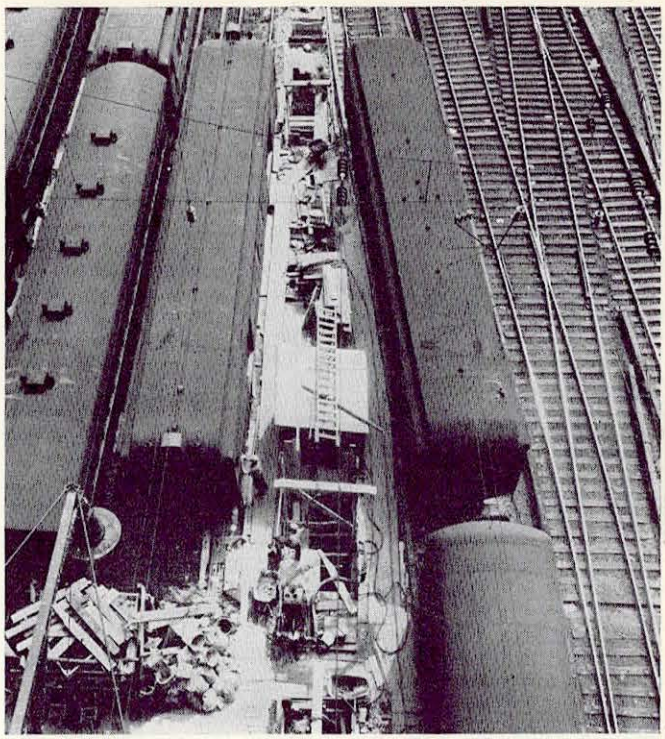
Adverse Conditions for Construction

Altogether, 206 column footings were put down in a very irregular layout, as dictated by the track layout. Lengthwise of the structure, that is, parallel with the tracks, a spacing of from about 20 to 23 ft. was generally possible, but laterally, the spacing varies from as little as 18 ft., to a maximum of 115 ft. This variable spacing called for a wide range of footing depths and sizes, as well as an equally wide range of column and girder sizes.

In a cut of generally satisfactory rock, little trouble was expected in the footing excavation work from the standpoint of handling the material and securing solid foundations. In fact, the substructure contract was let on the basis of a general foundation depth from 3 to 5 ft. below the top of rail. As it turned out, however, suitable foundations at anywhere near the depth anticipated were possible at only seven column sites, and it was necessary to excavate to depths of from 20 to 30 ft. for at least 50 per cent of the column footings. The deepest excavation was 33 ft. below the base of rail.

The rock penetrated was all of a granitic character, with some mica schist distributed throughout it, but to varying depths it was found to be of irregular stratification and badly shattered. On encountering the shattered condition, it was recognized that this had been brought about by the heavy blasting done in making the deep track cut originally and in blowing out the rock for the express subway and cable ducts.

Owing to the close proximity of the tracks, practically all footing excavations had to be sheathed and braced, and at 58 points the tracks had to be shored up on both sides of the holes with heavy bridge timbers. For this same reason largely, no blasting was permitted, rock drills being used exclusively, and all rock removed had to be brought up in buckets, either hand over hand, or with the aid of sheaves suspended from simple frames erected parallel with the tracks.



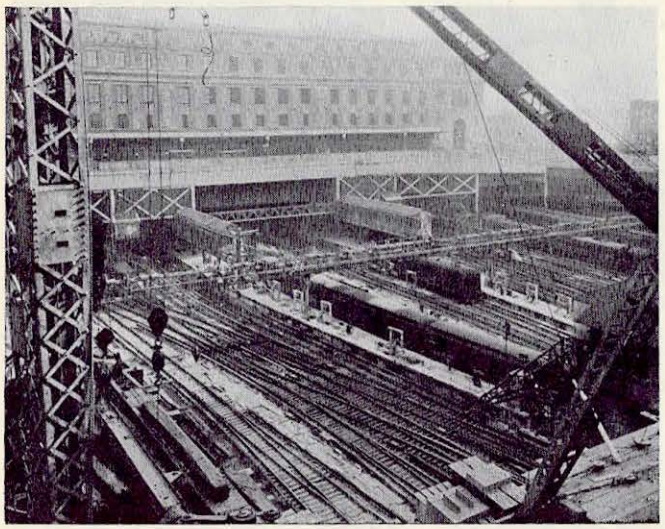
A Total of 206 Column Footings Were Put Down Under Conditions Such As Are Illustrated Here

Without surface storage area of any extent, practically all of the rock removed had to be carried by hand to waste bins placed at several points, from which it could be loaded into cars later, or to elevators at several points, where it could be raised to the street level for removal by trucks. In the few cases where the footing excavation penetrated the express tunnel, most of the rock removed could be wheeled off through the tunnel.

Some of the most difficult foundation work was encountered at the points where the new footings intersected or came directly over the express tunnel, the main sub-surface power ducts and the principal drainage lines. Where it was only a matter of breaking through one of the side walls of the tunnel, this was permitted, even though it presented a difficult waterproofing problem to seal the tunnel against ground water, but at several points it was necessary to straddle the tunnel and drainage lines by means of heavy structural steel and to transfer the column loads to footings on each side, well below the base of the structure involved. Water was encountered in practically all foundation excavations, but it caused little difficulty since it could be pumped readily to the surface to be carried off by the drainage system.

At two points, catenary poles of the overhead electrification were located on new column sites and presented a difficult problem. Here the poles, which could not be removed without extensive electrical wiring changes, were first braced rigidly in position to remove all weight from their footings, and then they were cut off about two feet above the top of rail, permitting the removal of their footings and excavation for the new column foundations. Later, this expedient caused some difficulty, since the poles interfered with the erection of certain floor girders overhead, which girders had to be set and made to support the catenary before the poles could be taken down.

All columns were made to rest on heavy steel billets



West of Pennsylvania Station and General Post Office, Showing Congested Area Covered by New Post Office Annex

or structural steel grillages and billets, depending upon the column loads. Some of the larger grillages placed have a spread of as much as 12 ft. by 6 ft., with superimposed billets as large as 72 in. by 60 in., and 9¾ in. thick.

Unusually Heavy Deck Steel Used

The steel erection was equally as interesting and difficult as the foundation construction, this being brought about by the 11,000-volt overhead electrification, the density of passenger train movements, and the size and weight of many of the girders placed. In this work, a clearance of 28 ft. was maintained above top of rail for all members spanning the tracks, and a minimum of 18 in. side clearance was maintained for all columns. An indication of the congestion which prevailed in the layout is the fact that to obtain the specified minimum side clearance, a number of columns had to be set on a skew to bring their least dimension at right angles to adjacent tracks.

The largest members used in the floor construction are 13 girders spanning the network of tracks and switches forming the throat to the station tracks. These girders are 115 ft. 10 in. long, 9 ft. 2 in. high, under cover plates, and weigh approximately 152 tons. They were readily set in place, but they presented a most difficult transportation problem in moving them through the streets from the Thirty-seventh street waterfront yard to which they had been shipped. This difficulty was not only because of their weight, but also because of the turns necessary in reaching the building site, particularly under the elevated railroad structure on Ninth avenue. Delivery was made on two 16-wheel, low bolster trucks, hauled and maneuvered by six large motor trucks. This was not done, however, until a templet of the girders had been hauled through the streets to insure that sufficient clearance was available for the movement of the girders and to determine the most desirable movements through and around the elevated structure columns.

As many as eight derricks were employed in setting the steel, the largest being two with a capacity of 135 tons each, used in setting the heaviest girders. All of the derricks were operated from the new floor level above the tracks, being moved forward over the steel as the work progressed. To insure the greatest possible safety, it was required that the hoisting equipment for these derricks be of the latest type, each drum being equipped with automatic safety brakes so arranged that the brakes act automatically in case of an interruption of power or the abandonment of the machine by the operator.

No steel was set from the track level, and none except the lightest deck steel was placed over live tracks, the heavy steel being set between regular or slightly altered train movements. With more than 1,000 train movements daily, this, of necessity, brought about the setting of all of the heavy steel during the night or early morning, the periods of lightest traffic. Even within these hours, the working periods available were very limited, 45 minutes being the longest allowed at any time, even for setting the 152-ton girders.

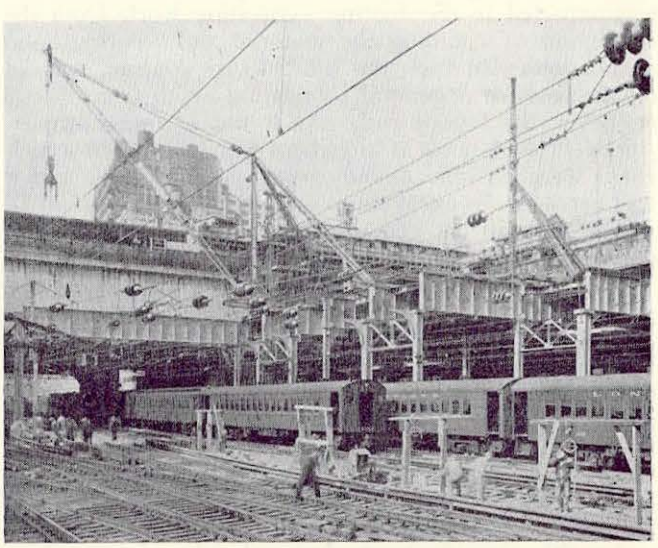
Work Was Carefully Scheduled

Because of the hazard of accident in setting the steel, both to the workmen and to the railroad property, the heavy steel was placed, piece by piece, only after a definite set-up of all factors involved, calculated to protect everyone concerned. This protective system was centered largely around one man, a representative of the engineer in charge for the railroad, who, as a contact man, co-ordinated the parts played by all of the various interests involved.

When the contractor desired to set certain pieces of heavy steel, he would submit his program to the contact man, stating where the specific pieces were to be erected. The contact man would then submit the program to the terminal trainmaster through his train director located in the interlocking tower in the station area, and a definite schedule would be lined up to govern the moves of the contractor. In accordance with the schedule prepared, the trainmaster issued orders to his different train directors controlling movements through the terminal, so that each knew of the moves permissible and the specific dead time set for placing steel.

With the schedule before him, the contact man notified the signal and third-rail forces and the high tension linemen and track watchmen, each through their respective foremen, and the foremen, in turn, assigned their men to the proper positions at the times specified. At the time set for steel work, the catenary was de-energized in the area involved, under the direction of the foreman of electric traction, and, under orders by the train directors, traffic was stopped or diverted to clear the work.

When all of these arrangements had been made, the proper representative of each department reported to the contact man that all was in readiness, and the contact



Excavating for Column Footings and Erecting Steel for the Post Office Annex Substructure While Clearing for More Than 1,000 Electrified Train and Engine Movements Daily

man, in turn, then authorized the contractor's representative to proceed with his work. The contractor was held strictly to the time interval allowed, and when the interval was up, or just as soon as the scheduled work was completed prior to the end of the interval, the contractor's representative notified the contact man, who, in turn, notified all of the railroad forces concerned.

Unusual Safety Precautions Taken

Owing to the hazard presented by the overhead trolleys and the third rails, thorough precautions were taken to protect all of the workmen. The contractor's foreman or representative was required to sign a clearance sheet or release when he was notified that the current was turned off, and also when notified that it was turned on. After notification that the current had been turned on, it was distinctly understood that no more steel was to be placed in the area affected.

While setting steel, from 10 to 24 track watchmen were maintained about the work to warn men and trains. Signalmen, linemen and third-rail men were stationed at suitable points to look after the facilities in their charge and to be available in case of need. As a further precaution, all derricks were grounded, as were also a number of columns in the new construction, in order to carry off any currents which might pass through them.

After the steel was set in place and temporarily bolted up, a solid floor of timber staging was suspended from it, providing a safe working level above the trolley wires, and also protection to engines and coaches against dripping concrete while placing the floor slab and steel encasement. Not even riveting was permitted until this working floor had been installed.

As a safeguard to those men engaged in the foundation work, the third rails near all working points were guarded on the back side by ⅞-in. boards, continuous from the top protection board down to the top of tie. Also, during certain stages of the excavation work, and while setting billets, grillages and columns, rubber blankets were thrown over the unprotected side of the third rail.

The necessity for these precautions is evident when it is realized that when the foundation work was at its peak, as many as 500 men were engaged in various operations on or below the track level, in an area considerably less than 500 ft. square, through which there were more than 100 movements an hour during certain periods of the day. Furthermore, the problem was made more serious by the fact that the men, being in the employ of the building contractor, were not naturally as alert to the hazards of train movements and electrification as seasoned railroad employees would be. In spite of these unusually unfavorable conditions, however, not a single man was killed or seriously injured in the work, either on the track level or in erecting the steel.

The entire substructure work was done under the general direction of James A. Wetmore, acting supervising architect for the U. S. Treasury Department, represented on the job by Edward F. O'Brien, construction engineer for the department. Architects for the project were McKim, Meade & White, assisted in engineering matters by Gibbs & Hill, consulting engineers. The steel for the substructure, a total of 11,100 tons, was supplied by the McClintic-Marshall Corporation, and was erected under the supervision of George C. Lane. Actual construction was done by James Stewart & Company, Inc., under the personal supervision of George N. Riker, chief engineer. All interests of the railroad in the work were under the direction of A. C. Watson, chief engineer of the New York zone of the Pennsylvania, directly represented by E. L. Goldsmith, supervisor of construction.

Railway Storekeeping Many Sided

(*Continued from page 338*)

tions of 18 of 48 roads considered are known to perform the accounting work in connection with disbursements, 14 of the roads charging the cost to stores expense and 2 charging it in other ways. The cost of waybilling, included by 14 roads among supply-department work, is included in stores expense in 10 cases and excluded in 4. On 24 roads of the 48 studied, the stores departments deliver material to the shops, roundhouses or car yards, or all of these, charging the cost of the work to stores expense in 15 cases and excluding it in 9 cases, while additional trucking of various kinds, undertaken for other departments by the stores organization of 10 roads, is included in stores expense in 4 cases and excluded in 6.

In all cases where supply cars are operated, the costs incurred by the stores forces are included in stores expense, but the practice in accounting for other expenses incident to supply-car operation varies. The cost of handling scrap at scrap yards is included in stores expense on 7 of 11 roads and excluded by 4 roads, while in 17 instances where stores organizations do reclamation work, the cost is included in stores expense in 6 cases and excluded in 11. On the 48 roads studied, stores organizations reported handling all or part of the work of destroying cars and locomotives in 8 instances, charging the work to stores expense in 2 cases and excluding it in 6 cases. In 2 of 25 oil-house operations, the cost is excluded from stores expense. In all instances reported, the cost of operating wood and rail mills and tie-treating plants by stores forces is excluded, while the cost of mimeograph, duplicating work and typewriter repairing performed is included in half the cases reported and excluded in the other cases.

Stores Expense Includes Outside Costs

With few exceptions, stores expense does not include any part of such indirect costs involved for handling material as the cost of constructing the building and other facilities built for the use of the supply organization, the cost of maintaining such facilities or any interest or taxes on the facilities or the materials in stock, these expenses being taken care of in the investment or operating accounts. It appears to be the general practice, however, to include in stores expense charges for such items as heat, light, water, rent, telephone and telegraph, and similar incidental charges to the extent that such items of cost are known or determined as a matter of policy. Where other departments perform services in connection with the handling of materials prior to their use, it is also customary on many roads to include such costs in stores expense. Thus, some roads include in stores expense the costs incurred by accounting departments for pricing and vouchering invoices and accounting for disbursements; also a percentage of the labor for test-department work performed by other departments; while in a number of instances, the labor cost incurred by mechanical or maintenance of way forces in assisting store forces in handling materials or in switching cars or in handling scrap, as well as, in some cases, in handling work trains, are included. While such expenses do not usually represent a large part of the stores expense, the variations invite a detailed examination of the practices followed on each road in any complete study of stores expense. Such an examination will be afforded in a later issue of the *Railway Age* through the publication of the reports furnished by a large number of representative roads.

Eastman Proposes Equipment Program

WASHINGTON, D. C.

IN personal letters, accompanied by copies of a questionnaire, the executives of Class I railroads have been requested by Co-ordinator Eastman to make a thorough canvass of existing freight car equipment and to submit at the earliest practicable date their views as to the repair or retirement of worn-out and obsolete cars. The survey calls for a detailed description of freight cars, separated by classes, age, capacity, weight, and character of construction, with figures for each series showing ledger values, accrued depreciation, net salvage value and retirement charge. The railroads are asked to insert, opposite each series, their recommendation for repairs and retirement each year up to and including 1938, with the average cost per car. The bad-order ratio of each series is also requested.

The Co-ordinator points out that notwithstanding many thousands of freight cars have been retired during the past three years, there are still many thousands whose period of service has expired but which still occupy yard and storage tracks, constituting a burden upon transportation and creating unnecessary hazards. In anticipation of a continued increase in traffic, it is desirable that this unproductive equipment be dismantled, he says.

It also appears from reports already available that the number of freight cars in need of extensive repairs is considerably above normal. The complete information called for in the survey is needed, Mr. Eastman says, "if a comprehensive program is to be adopted for the general retirement and rehabilitation of freight equipment, and adequate plans made for the purchase or construction of new freight cars."

The Co-ordinator in his letter calls attention to the fact that the Interstate Commerce Commission has granted special authority during recent months to a number of railroads, under which they were permitted to depart from the usual accounting procedure, which makes retirement of freight train cars an operating expense to the extent that the depreciation reserve is inadequate, and instead to charge the amount to profit and loss. The suggestion is made that other railroads give consideration to the advisability of securing such special authorization from the commission, in order that there may be less hesitancy in retiring and dismantling obsolete cars.

The Co-ordinator points out that such a program of dismantlement will contribute to the success of the Administration emergency program for increasing employment and effect certain operating savings.

The Co-ordinator has also addressed to the executives of Class I railroads a letter in which they are asked to consider the immediate voluntary restriction to service on their own lines of cars of light construction, as well as cars of larger capacity but in such condition that they will be candidates for retirement within a period of two and one-half years. The purpose of the suggestion is to bring about quickly a higher standard of equipment to be used in handling traffic interchanged between carriers; to confine to local use the cars best suited for such service; to enable the owning road to control their use and repair, and at the same time to avoid imposing a burden upon another road through the excess empty car mileage and other operating expenses involved in the handling of such equipment.

Recent reports of the Car Service Division of the American Railway Association indicate that the time for such a move is propitious, as the proportion of cars on owners' rails is about at the peak.

Aside from simplifying the problem of freight car repairs, the suggestions should tend to reduce maintenance and operating costs, according to Mr. Eastman's statement.

Reports of the Car Service Division for 1932 show nearly one-third of the total cars loaded were loaded by the roads at their own freight houses with l.c.l. or merchandise traffic, with which loading the shippers were not involved. This prompted the suggestion that their older box cars be utilized in l.c.l. shuttle service, and as the average tons per car is low, this should increase the ratio of "net" to "gross" ton-miles.

As to open-top cars, it was suggested that the largest capacity cars be preferentially utilized for the handling of company coal between the mines and fuel stations, next for commercial traffic, and, where the supply is inadequate to meet the demands, that the smaller cars be used to hold reserve company fuel supply by a transfer of coal to smaller cars through modern coal chutes. The cost of maintenance of such cars for yard movements will then be less than if kept in road service and the savings in mine switching and road-haul will more than offset the cost of releasing the large cars from storage service.

A Communication . . .

Why Not Accept Rail Scrip for Accessorial Passenger Services?

HASTINGS-ON-HUDSON, N. Y.

TO THE EDITOR:

Referring to the scrip books now being sold for interline use on Western railroads. Although I do not think it is being done on any line, it has been suggested that commercial houses and their travelers be sold a "legal tender" mileage book in one or more units as may be thought advisable and at a lower rate than that for individual tickets; such books to be presentable for coach, dining or cafe car meals, sleeping car fare, excess baggage, etc.

When the ticket agent collects $20 or $50 for such proposed "legal tender" mileage book the money goes into the till; it is in possession of the railroad. If presented for coach fare, the train conductor handles as was done with mileage books in use 20 years ago. Proper mileage was pulled from the book. There does not appear to be any reason why the same method could not be followed by any other railroad representative. If presented in dining car for a meal costing $1 it would be in order for the steward to take $1 worth of coupons from the book. Or, if coupons were lifted in a sleeping car the Pullman conductor would transmit them to his auditing department with proper notations as the basis for a settlement between the railroad and the Pullman Company. The baggageman collecting for excess baggage would transmit coupons to the auditor who would make proper credits and debits.

In some minor respects there may be objections to the use of mileage books for all such legal tender purposes, but the mileage book has a psychological value that is rarely stressed. For instance, when the proprietor of a cafe sells a meal ticket at reduced rate he knows that the possession of the book by the holder has a psychological effect in suggesting that it be used more often than would be the case if cash were used for each transaction.

Going farther: Is there, from a practical view, any reason for such book, after being sold and money collected therefor, being restricted to the use only of the purchaser?

If an individual buys a meal card or a hat he has the moral and legal right to permit usage by others. Why not permit anyone of the family to use a "legal tender" mileage book at any time?

EDWIN SWERGAL

Odds and Ends . . .

Locomotive Larceny

Charles Wycoski of Union City, Conn., has decided that crime does not pay. Charles, 17 years of age, wanted to see the world, and he decided that a railroad locomotive would be a handy thing in which to travel, so he appropriated a New Haven engine just outside of Milford in the temporary absence of the train crew. By a few experiments, he found out how to start the locomotive, but knowledge of how to stop it would have been even more timely because a string of freight cars loaded with coal blocked the track only a short distance ahead. Charles jumped to safety just before the engine smashed into the coal cars, derailing several of them and then overturning. Convicted of stealing a locomotive, Charles is now doing time in the Milford jail, and he will be 30 days older and doubtless considerably wiser when he gets out than he was when he went in.

Another Locomotive Model

The number of men who spend their spare time building model locomotives never ceases to astound this department. The latest locomotive model to come to our attention is a small reproduction of the Baltimore & Ohio's President Washington. It was constructed by Leslie C. Reeves of Pitman, N. J., the job having accounted for 1,500 hr. of his spare time during the last three years. The model is valued at $3,000 and among its characteristics and capabilities are a speed of 8 to 10 miles an hour and an estimated hauling capacity of 2 tons. Either coal or charcoal can be used as fuel. Approximately 300 copper rivets were used in the construction of the boiler and about 1,600 copper rivets in the tender. The total length of the engine and tender is 44½ in. The model was constructed from prints of the original drawings for the B. & O. locomotive.

For the Puzzle Fans

We are indebted to R. J. Littlefield, supervisor of motor service of the Pennsylvania, for the following brain teaser which is said to be one of the questions in an examination which has to be passed by all applicants for the job of highway patrolman in the state of Pennsylvania. The problem goes like this:

"If the distance from Roswell to Vaughn is 100 miles and an automobile leaves Roswell going north towards Vaughn, running at a rate of speed of 30 miles per hour, and an automobile leaves Vaughn going south towards Roswell, running at a rate of speed of 60 miles per hour, both automobiles leaving each town at the same time, which automobile will be farther from Vaughn when they pass?"

If any of our readers can figure this one out, we shall be glad to hear from them.

The Crew of the "Royal Scot"

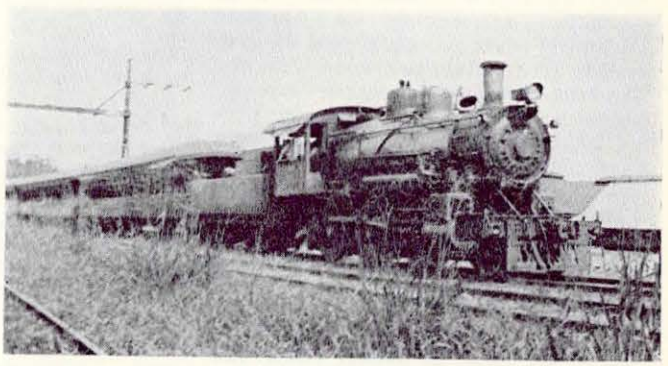
The best known engine crew in the United States, thanks to Chicago's Century of Progress, are William Gilbertson and John Jackson, driver and stoker, respectively, of the "Royal Scot" which is being exhibited at Chicago by the London, Midland & Scottish. They accompanied their famous train to this country and have been keeping a watchful eye on it ever since, except for a couple of days recently when they made a hurried trip to New York as guests of the Pennsylvania. Both Gilbertson and Jackson rode in the cab of the Broadway Limited for a part of the journey each way. Asked for his opinion of the American locomotive, Gilbertson said, "She's a bit shaky, I'll say that." On the other hand, he was particularly delighted with one thing. It was a cup of tea which he had on the train and which he described as the first really good tea that he had tasted since he left England. Congratulations to the Pennsylvania dining car department.

World's Fair Railway Statistics

The publicity department of the Norfolk & Western has turned its attention to the N. & W. exhibit at the Chicago World's Fair and has produced some interesting statistics concerning the operations of the miniature passenger and freight trains which are a center of attraction. The main line track extends around the front of the exhibit from a tunnel on one side to another tunnel on the opposite side. The trains, operating alternately in opposite directions, enter the tunnel at one side of the exhibit, circle the booth while hidden from view and, after a 35-second interval, emerge from the portal at the opposite side. Each of the trains travels approximately 36 ft. in 35 seconds or, during their 12-hr. day, about 22,200 ft. or 4.2 miles. It has been estimated that during the period of the fair each train will travel approximately 660 miles—roughly the distance between Norfolk, Va., and Columbus, Ohio and Cincinnati, which are the eastern and western terminals of the main line of the Norfolk & Western. The trains are excellent reproductions of the railway's modern freight and passenger equipment. The coal and box cars of the freight train are exact models of the newest cars of those types, and the locomotive is a duplicate in miniature of the N. & W.'s mountain-type freight engines. The passenger train is a life-like model of the Norfolk & Western's Limited.

A Real Transcontinental Train

The train pictured in the accompanying illustration need feel no envy of 180-miles-an-hour airplanes. Its own proud record for the crossing of the continent, from the Atlantic to the Pacific, is a mere hour and 45 minutes, and it does it, furthermore, all



From the Atlantic to the Pacific in 1 hr. 45 min. is this Train's Record

the time. It is only fair to add, however, that the train belongs to the Panama Railroad, and that its transcontinental journey consists of the 47-mile run from Colon to Panama.

C. W. Galloway a 50-Year Veteran

Wednesday, August 23, was the 50th anniversary of the entry into Baltimore & Ohio service of Charles W. Galloway, vice-president in charge of operation and maintenance of the railway. Mr. Galloway represents the third generation of his family to serve the Baltimore & Ohio continuously since its inception in 1827. In 1830, his grandfather, William Galloway, drove the first horse car which ran from Mount Claire station in Baltimore to Ellicott's Mills (now Ellicott City, Md.). When the locomotive supplanted the horse on this pioneer railroad, William Galloway became a railroad engineer, subsequently completing 50 years of service in this capacity. Vice-President Galloway's father, Charles Barton Galloway, also was a locomotive engineer; and upon his death, his son, conforming to family tradition, began his career with the B. & O. at the age of 14 as a messenger boy in the telegraph office in Baltimore, on August 23, 1883. Promotions were not long in coming, and Mr. Galloway was made superintendent of the Cumberland division in 1901, at the age of 33. Eleven years later, he was general manager of the railroad. Mr. Galloway was elected vice-president in charge of operation and maintenance of the system in 1920, shortly after the termination of federal control of the railroads, under which he was federal manager of the Baltimore & Ohio and other lines in its territory.

NEWS

Temporary Code Approved for Motor Truck Operators

NRA accepts new labor provisions without endorsing either of rival organizations

Without endorsing either of the rival organizations now seeking to represent the trucking industry the National Recovery Administration has approved substitute labor paragraphs for those of the President's Re-Employment Agreement which will enable truckers, upon signing certificates of compliance, to operate temporarily under the Blue Eagle pending the development of a specific code for the industry which is now being worked out by committees representing the American Highway Freight Association and the Federated Truck Associations of America. The temporary code provisions were requested by the latter organization but were not approved by the administration until after conferences with representatives of both.

The temporary labor provisions state that "drivers, helpers and dispatchers shall be employed not more than a 48-hour week averaged over a three-months' period" but with a provision that "on inter-city or line hauls the operator may elect an hourly basis or the following mileage ratios: 720 miles of travel for tractor, semi-trailer and extra trailer, 960 miles for tractor and semi-trailer or truck and trailer, 1,060 miles for truck, each respectively shall equal 48 hours of labor. Such mileage basis shall not exceed the maximum of 48 hours per week averaged over a three months' period." A railroad trainman paid on a mileage basis would earn 80 hours' pay for 1,000 miles.

The temporary code rule also states that the hour provisions of the P.R.A. shall not apply to employees in a managerial capacity receiving more than $35.00 per week, nor to employees on emergency maintenance or emergency repair work, outside salesmen or solicitors, watchmen or station managers. Clerical and office employees are to be employed not more than 40 hours per week. No employee is to be paid less than 40 cents per hour unless the hourly rate for the same class of work on July 15, 1929, was less than 40 cents per hour; in which latter case they are to be paid not less than the hourly rate of July 15, 1929, and in no event less than 30 cents per hour in the North and 25 cents per hour in the South. The South is defined to include Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

Efforts to bring about an amalgamation of the American Highway Freight Association and the Federated Truck Associations apparently failed at meetings held by the two organizations in Washington last week, after a conference committee composed of representatives of both reported that it had been unable to reach an agreement. There was general agreement that for-hire operators and private and contract carriers should be included, if possible, under a single code, but there were irreconcilable differences as to the basis of representation in the make-up of the board of directors. The Federated Truck Associations elected officers including John W. Blood, of Wichita, Kan., as president and vice-presidents representing common carriers, over-the-road contract carriers, cartage contract carriers, and private carriers. The former officers of the American Highway Freight Association resigned, according to a previous understanding, and a new set of officers was chosen with Ted V. Rodgers, of Scranton, Pa., as president. Both meetings were recessed while the conference committee was seeking to bring about an agreement on a plan for consolidation but after that had failed the Federated Truck Associations voted to discharge their members of the conference committee, while the American Highway Freight Association voted to keep its committee alive so long as there was any possibility of an agreement. Certain directors of the A.H.F.A. who had been prominent in the activities of the newer organization resigned and members of a new board of directors of the A.H.F.A. were seated after some consideration of evidence as to their proper selection by state organizations.

National Rivers and Harbors Congress To Hold Special Session

A special session of the National Rivers and Harbors Congress has been called to be held in Chicago on October 12 and 13 to consider the present status of the rivers and harbors, flood control and waterways program, and to formulate a legislative program for presentation at the forthcoming session of Congress in January, 1934.

Hayden Made District Manager Car Service Division at Detroit

J. J. Hayden, assistant to the manager of the refrigeration department of the American Railway Association, at Chicago, has been appointed district manager of District No. 2 of the Car Service Division, with headquarters at Detroit, Mich. Mr. Hayden replaces C. R. Megee, who has been transferred to Pittsburgh, Pa., to succeed C. F. Wolcott, who has been assigned to other duties.

Proposed L. A. & T. Wage Basis Found Unjustified

Report of the President's emergency board made public at White House on August 29

The emergency board appointed by the President to investigate the wage dispute between the Louisiana, Arkansas & Texas and 72 of its train and engine service employees has submitted a report which was made public at the White House on August 29 concluding that the action of the company in putting into effect a new schedule of rates of pay, rules, and working conditions on June 3, as a result of which the employees voted to strike, was not justified and that the employees were justified in their refusal to accept the new schedule. The schedule of rates, rules and working conditions in effect prior to June 3 should be restored, the board finds, stating that the new schedule does not amply protect the established rights of the employees and that the rates have been depressed unreasonably below those on connecting and competing lines and even parts of the same system. The board includes Frank P. Douglas, L. W. Courtney, and Waldo H. Hamilton. It found that the employees of this road, whose wages were already depressed more than 9 per cent below those of men on adjacent lines were being asked to take further cuts ranging from 3 to 19 per cent and that the new schedule involves "radical changes of the bases upon which and the methods by which earnings are calculated," being based upon a straight hour basis instead of the dual hours-mileage system generally in effect, in addition to many changes in rules and working conditions.

One of the questions before the board was that of the carrier's ability to pay, which included that as to whether it should be considered as part of the Louisiana & Arkansas system. The board found that as legal entities the corporations are distinct but that the ownership is identical and included the following on the question of national policy:

"But even if the railroads are required as separate lines, it does not follow that the carrier can justify serious departures from standard wages and practices by pleading inability to pay. As relating to the industry as a whole, ability to pay is a factor of consequences; if the national railway system is not taking in the money it cannot pay out the wages. And in a rough and tumble world the wages of employees must to some extent depend upon the affluence of their employers. But in

(*Continued on page 352*)

NRA Holds Hearings on Proposed Bus Code

Competition with railroads among questions receiving prominent place in discussions

Questions as to the effect on competitive relations between railroad and bus transportation took a prominent place in the discussions at the hearing on the proposed code of fair competition for the bus industry submitted to the National Recovery Administration by the National Association of Motor Bus Operators, held before Deputy Administrator Malcolm Muir at Washington on August 30. The proposed code itself declared that co-ordination of the regulation of steam railroad passenger transportation with the purposes of the declared policy of the industrial recovery act must be accomplished to enable the effective administration of the code, while representatives of both railroad and bus employees objected to the wage and hour provisions of the proposed code, showing that they are far below railroad standards.

W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, announcing that that organization had recently opened its membership to include "over-the-road" bus employees, urged inclusion in the code of the provision in the President's Reemployment Agreement that the compensation of employees in excess of the minimum should not be reduced but should be readjusted accordingly, and also the provision that no subterfuge shall be resorted to to defeat the purpose. He also objected to the provision in the code for an extension of six hours a week for a six-months period to the maximum of 48 hours a week proposed, saying that the 48 hours should represent the maximum average for a year and that seasonal additional employment should be allowed for only two months. He also suggested that any reference to the "open shop" question be eliminated.

The principal objection to the hours and wage provisions was made by Thomas P. O'Brien, representing the International Brotherhood of Teamsters, Chauffeurs, Helpers and Garage Employees, who said that bus drivers are required to have more skill than locomotive engineers and are entitled to as great or greater compensation. He said the railroad engineers are paid on a 48-hours a week schedule whereas bus drivers in many cases have been required to work 100 or more hours a week. He urged a maximum of 40 hours a week, with a provision for not to exceed 250 miles for eight hours and asked for a minimum wage of $40 a week in place of the $15 a week proposed. He also objected that the proposed code does not include provision for payment for hours in which employees are held on duty by reason of delays, etc., and asked for compensation for expenses away from home.

Some objections to the code proposed by the association were also voiced by F. J. Scarr, representing the American Bus Association, who also suggested that provision be made for co-operation by the federal co-ordinator of transportation in the administration of the code in so far as it affects railroad-affiliated bus operations. Mr. Muir stated that it had been decided that bus subsidiaries of the railroads should be included in the code. Mr. Scarr also recommended elimination of the provision for restricting licenses to members of the association.

Arthur M. Hill, president of the National Association of Motor Bus Operators, in a statement on the proposed code said that the railroads are not governed by minimum wage requirements and that the only limitation of their hours of employment by law is the 16-hour law. He also contended that railroads may compete unfairly as to passenger fares and compensate themselves from their freight earnings. He suggested an addition to the provision as to licenses that no new license be issued to an operator without a state certificate of public convenience and necessity.

The code provides that the National Motor Bus Code Committee shall file as a supplement to the code a schedule of tariffs applying between the principal towns and cities of the United States and that thereafter no carrier shall collect a less fare than that shown.

Robert Lester, labor advisor for the N. R.A. as to this code, criticized bitterly the wage and employment provisions, saying they are grossly inadequate. He urged a minimum of $40 a week for drivers, for a five-day week of eight hours a day, with a maximum of 250 miles in 24 hours. He also said he did not want the motor bus industry to be organized on a basis that would ruin the railroads.

Canadian Roads in July

The Canadian National for July reported gross revenues of $13,282,596, an increase of $492,727 as compared with July, 1932. Operating expenses in July this year were $12,462,130, a decrease of $119,031 from the expenses of July, 1932, leaving a net revenue for the month of July this year of $820,466, as against net revenue in July, 1932, of $208,708, an increase of $611,758.

For the first seven months of this year the gross revenues were $80,757,467, a decrease of $12,204,890 as compared with the corresponding period of last year. Operating expenses for the seven months of 1933 were $82,915,982, a decrease of $9,217,298 from the similar period of last year, leaving a net deficit for the first seven months of this year of $2,158,515 as against a net revenue in the 1932 period of $829,076, a decrease of $2,987,592.

The Canadian Pacific's net earnings in July amounted to $1,368,380, as contrasted with $859,708 in July of last year, representing an increase of $508,671. Gross for the month under review totalled $10,142,427, as compared with $9,669,343 in July, 1932, an increase of $473,084, while operating expenses at $8,774,047 showed a decrease of $35,587 from the $8,809,634 reported for July of last year.

For the first seven months of this year net earnings of the road amounted to $6,229,521, as compared with $6,111,587 in the corresponding seven months of last year, an increase of $117,933. Gross earnings for the seven months at $60,865,922 showed a decrease of $6,848,720, while operating expenses for the period at $54,636,401 showed a reduction of $6,966,654.

Railways of Britain Extolled by Woodlock

Sales research, complete service, intelligent pricing promise new prosperity era

A pleasant surprise was afforded to stockholders of the British railways, writes from London former Commissioner Thomas F. Woodlock in the Wall Street Journal, when the net for the half year ended June 30 was published recently. The companies had made economies in expenses which came near to offsetting the entire gross loss of the half year, with the result that dividend rates (such as they were) were for the most part maintained.

"This writer," Mr. Woodlock continues, "was curious as to the nature of these economies, and had the opportunity of questioning high officials of one of the companies, who were entirely frank in their replies. American readers may be interested in the main features of the railway position as disclosed by these replies. At least one of these is deserving of attention on our side of the Atlantic.

"As most people know, railroading in Great Britain differs in many respects from railroading with us; passenger traffic is of great importance here, and the movement of freight, except for minerals and similar heavy materials, is largely in the form of small lots, with store-door service and expedited delivery. A large percentage of this traffic is next-morning delivery and the vast majority of it is delivered within 36 hours. It is in short an extremely efficient and reliable service, and this is true also of heavy traffic.

"Container service is widely used for all manner of freight; bricks, for instance, are delivered from brick-yard to the job without intermediate handling, household goods from house to house, and so far has complete service been developed that a railroad company will undertake to transport a farmer with all his livestock, farm implements and house goods from one location to another for a round and inclusive sum. Not to multiply details, suffice it to say that the companies today hold themselves out to move anything from anywhere to anywhere, taking entire charge of all the transportation.

"Now the one great fact that seems to this writer to stand out in the case of the British railways is that the economies achieved this year in operating costs are not the result of temporary cuts of an emergency kind, to meet lowered gross revenues, so much as they are the fruit of the last ten years' work in transforming the aggregations of separate companies, put together under the consolidation plan, into four compact organisms, each with a single soul and a single team. Building a team out of former competitors, all of whom had a long tradition of *esprit de corps* behind them, was the first essential and in this country could not be done in a hurry.

"With this went intensive research into methods and costs—and when this writer says intensive he means precisely that. This study is now producing handsome returns on the new capital spent for modernization. Furthermore, it is safe to say that the prob-

lem of deferred maintenance which looms so large with us is virtually non-existent in Great Britain. This writer was assured that, in the case of the particular company whose officials he consulted, condition of track and rolling stock had in fact been improved at a lower money cost of maintenance. Here is where research has paid.

"Next to team building and research comes something which should engage the interest of our railroad managers, and that is the development of aggressive salesmanship by British railroads. One of the large companies has organized a department purely for the purpose of selling transportation of all kinds to everyone and has adopted the most up-to-date methods practiced by our own most successful industries. This has already produced notable results in passenger-traffic, especially by means of penny-a-mile summer fares with most liberal time and stop-over privileges. And this year passenger revenues indicate that the rail is competing at last in real fashion with the road.

"Coupled with the fact that rate-making for freight movement enjoys a freedom and flexibility here entirely without precedent on our side of the water, there is real scope for talent in business-getting and real talent is at work. It is this writer's humble opinion that our railroads might well send a committee of traffic managers to study the methods in use here to get business, for with all allowances for the antiquated and rigid system of our rate-making, much that is being done here might be transplanted to our side.

"We have nothing much to learn from British railroads in the matter of mechanical appliances and their use, but we may have something to learn in the matter of intensive research and costing, and we have a great plenty to learn in the matter of selling service. So far as rate-making is concerned the British practice is of extraordinary interest, but it is probably too much to hope that our Congress could be brought to the point of appreciating its merits.

"Summing it up in a sentence, it seems to this writer that the British railroads—or at least the best of them—have at last got hold of the problem in its large aspects, and that if the world is going to recover at all there is ahead of them a prospect of something like the old prosperity of 20 years ago. A moderate increase in gross earnings will produce relatively handsome net profits."

Wage Statistics for June

Class I railways, excluding switching and terminal companies, reported to the Interstate Commerce Commission a total of 957,532 employees as of the middle of the month of June. This was an increase of 19,126 over the number reported by the same roads for May, or 2.04 per cent, but it was 7.13 per cent less than the number in the same month of the preceding year. A total of 1,074,651 employees were reported as having received some pay during the month either for full time or part time, 24,099 less than the corresponding total for May, but the total number of hours paid for per working day in the month was 1.7 per cent greater in June than in May. The total compensation for the month was $115,433,189, which is the largest figure reported this year.

Public Works Funds Allotted for Missouri River Project

The Public Works Administration on August 24 allotted $14,153,108 to be expended in the improvement of the middle Missouri river by means of the instalment of revetment and dike systems to stabilize the navigation channel. About $2,000,000 will be expended between Kansas City and St. Joseph, Mo., and the remainder between St. Joseph, Mo., and Sioux City, Ia., and it is estimated that this work will furnish work for about 8,000 men for one year. The administration had previously allotted $11,500,000 for carrying on the nine-foot channel project in the upper Mississippi river. Congressional and other advocates of waterway improvements have recently expressed much concern and have filed complaints at the White House and with the Public Works Administration because greater progress has not been shown in making allotments for waterway improvements. They have indicated that pressure will be continued for the use of a substantial part of the $3,300,000,000 appropriated for public works for river and harbor improvements and flood control.

Public Works Administrator Harold L. Ickes announced on August 29 that an allotment of $36,986,956 had been made to the War Department for continuation of flood control work in the Memphis, Vicksburg and New Orleans districts on the lower Mississippi river. The War Department informed the Public Works Administration that the allotment will provide work for about 34,000 men for a year. Of the total amount $33,986,956 will be spent on construction and $3,000,000 for obligations in the New Madrid floodway and for rights of way in Arkansas on the Red river and in the Atchafalaya basin. These obligations are the result of court decisions and cannot be suspended.

The allotment is the second for flood control work on the lower Mississippi, the Public Works Administration having previously made an allotment of $7,000,000 for this purpose.

June Net Income $21,276,730

The 151 Class I railways have reported to the Interstate Commerce Commission a net income after fixed charges of $21,276,730 for the month of June, as compared with a net deficit of $20,632,703 in June, 1932. This reduced the net deficit for the first six months of the year to $101,710,247, as compared with $125,314,233 for the corresponding period of last year. The commission's compilation of selected income and balance-sheet items for June and six months follows:

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 146 reports (Form IBS) representing 151 steam railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)†

For the month of June			For the six months of	
1933	1932	*Income Items*	1933	1932
$59,479,537	$12,299,668	1. Net railway operating income	$152,899,508	$109,612,833
19,354,373	24,052,610	2. Other income	88,302,623	104,784,873
78,833,910	36,352,278	3. Total income	241,202,131	214,397,706
11,167,776	10,717,069	4. Rent for leased roads	65,147,882	63,880,130
44,620,845	44,221,717	5. Interest deductions	266,174,444	263,464,536
1,768,559	2,046,195	6. Other deductions	11,590,052	12,367,273
57,557,180	56,984,981	7. Total deductions	342,912,378	339,711,939
21,276,730	*d 20,632,703*	8. Net income	*d 101,710,247*	*d 125,314,233*
		9. Dividend declarations (from income and surplus):		
5,217,379	8,774,342	9-01. On common stock	27,839,478	40,901,282
2,013,488	3,388,827	9-02. On preferred stock	6,753,979	9,662,807

BALANCE-SHEET ITEMS

Selected Asset Items

	Balance at end of June	
	1933	1932
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$745,268,336	$759,284,887
11. Cash	294,422,726	275,016,294
12. Demand loans and deposits	31,864,221	36,414,454
13. Time drafts and deposits	23,804,920	17,636,712
14. Special deposits	47,932,471	49,179,796
15. Loans and bills receivable	10,344,292	18,907,797
16. Traffic and car-service balances receivable	48,528,493	45,910,661
17. Net balance receivable from agents and conductors	44,116,934	35,328,633
18. Miscellaneous accounts receivable	138,699,444	150,987,782
19. Materials and supplies	294,526,547	347,856,948
20. Interest and dividends receivable	40,954,889	34,590,048
21. Rents receivable	2,199,501	1,960,670
22. Other current assets	5,882,529	6,433,851
23. Total current assets (Items 11 to 22)	983,276,967	1,020,223,646
Selected Liability Items		
24. Funded debt maturing within six months*	81,422,290	78,073,246
25. Loans and bills payable Ø	345,780,954	262,948,574
26. Traffic and car-service balances payable	68,429,879	64,106,242
27. Audited accounts and wages payable	202,081,422	214,307,145
28. Miscellaneous accounts payable	65,383,959	59,787,295
29. Interest matured unpaid	217,479,383	182,284,784
30. Dividends matured unpaid	13,397,816	13,549,837
31. Funded debt matured unpaid	97,992,375	49,922,147
32. Unmatured dividends declared	5,868,309	5,216,447
33. Unmatured interest accrued	97,209,148	93,946,614
34. Unmatured rents accrued	20,253,679	20,678,649
35. Other current liabilities	22,040,498	21,654,702
36. Total current liabilities (Items 25 to 35)	1,155,917,422	988,402,436

† Excludes returns for Class I Switching and Terminal Companies. Data for this class of roads were included in all published statements prior to January, 1933.

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

Ø Includes obligations which mature less than two years after date of issue.

d Deficit.

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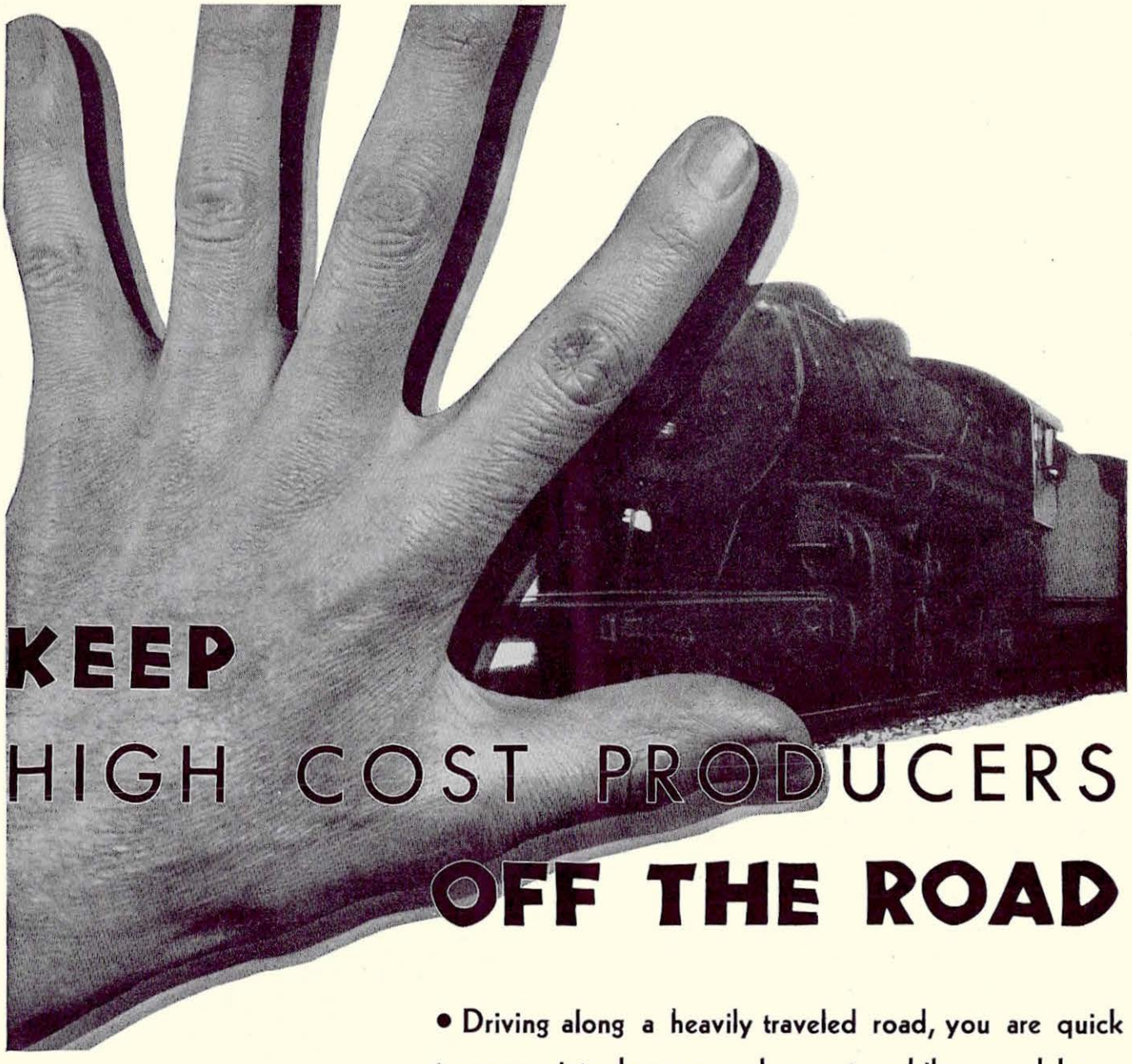

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Eastman Considers Ways of Spreading Railroad Employment

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The Port Authority persuaded the Public

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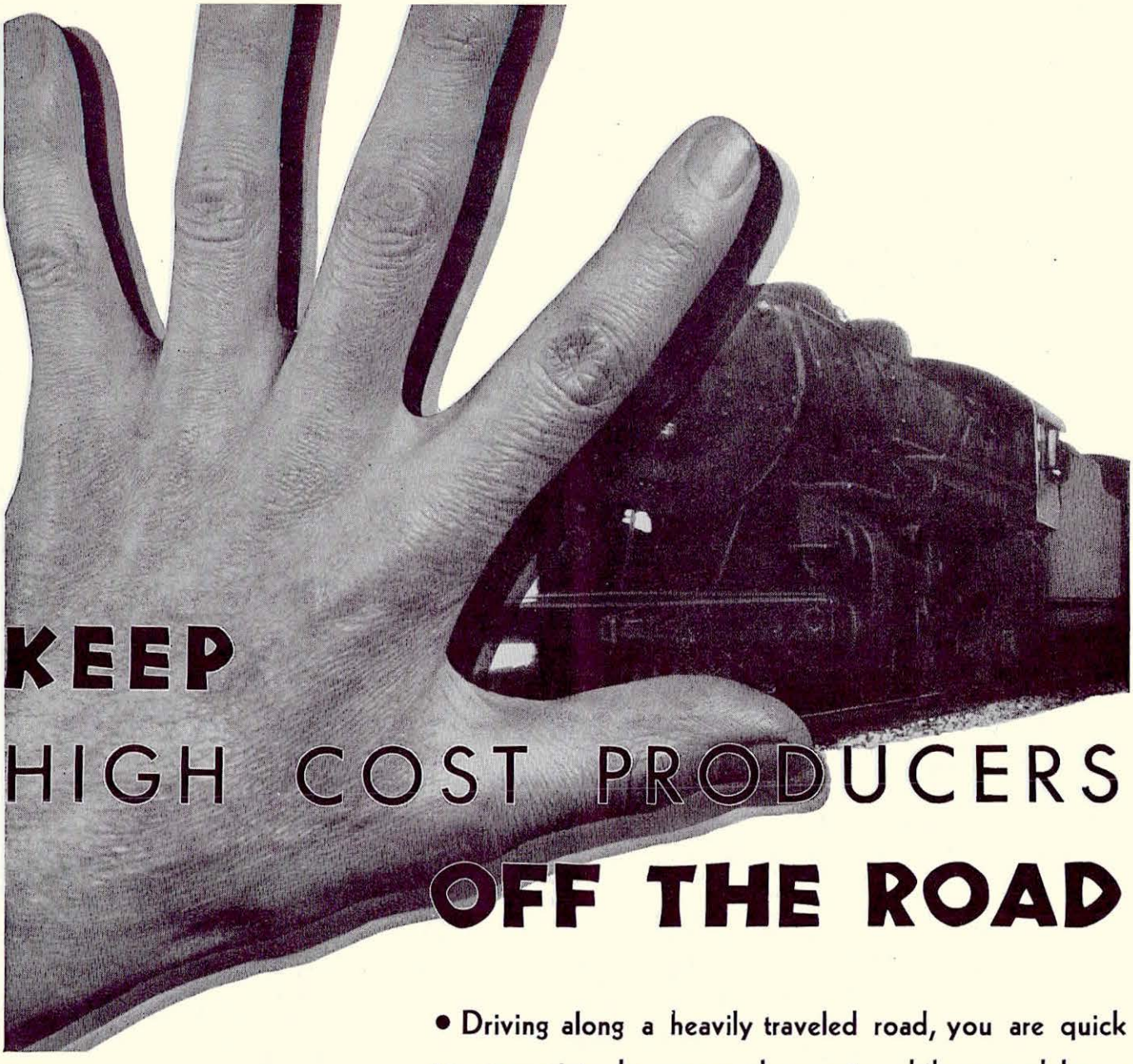

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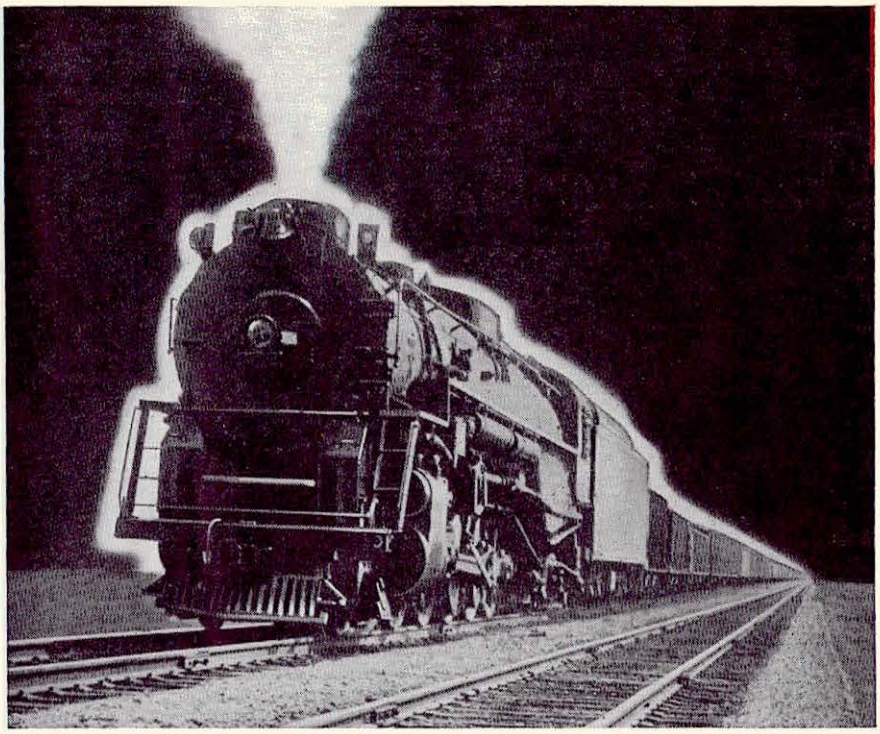


WHAT IS RAILROAD PRODUCTION?

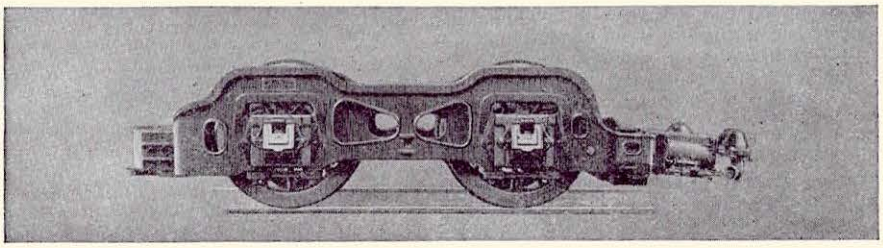
Railroads are manufacturing plants. Their product is "Transportation."

Increased production is as important to the railroad executive as it is to any manufacturer.

Gross ton miles per hour is the measurement of railroad production.

A comparison between non-Booster locomotives and Booster-equipped locomotives hauling through freight covering a comparable period showed that The Locomotive Booster increased railroad production by over 10%.

If all the locomotives on the division had been Booster-equipped, the increase would have been much greater. It will be when the job is completed.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Works Administration that the Holland Tunnel and the railroad ferries will soon be inadequate to handle the motor truck and automobile traffic across the portion of the Hudson river lying between the Battery and Forty-second street.

The original plan called for two tubes and the first application, for a loan of $75,000,000, was made to the Reconstruction Finance Corporation, but subsequently the plan was revised to provide for one tube at the present time so constructed that a second tube may be built in the future.

The Holland Tunnel, 2½ miles south of the proposed tunnel, is said to be now carrying an annual traffic of 12,000,000 vehicles, and the Port Authority estimates that the traffic in the first year of operation of the new tube will total at least 5,000,000 vehicles, in view of the fact that the ferries in the immediate vicinity carried almost 7,000,000 vehicles in 1932 and that in the last six years trans-Hudson vehicular traffic has increased from 16,000,000 to 29,000,000. A schedule of toll rates, proposed by the Port Authority, includes passenger automobiles at 50 cents, and buses at $1, with the expected average rate 54 cents per vehicle which now is being realized by the Holland Tunnel.

Proposed L.A.&T. Wage Basis Found Unjustified

(Continued from page 348)

a competitive market, the tendency is for an article, whether wheat or cotton, talent or skill, to have a single price. Strong concerns pay the market price for the human services they require; and weak concerns are not exempted, because of their poverty, from the market-price. If they cannot pay standard wages, they go into bankruptcy and their enterprises pass into other hands or cease to be. In times of prosperity the market for labor can be generally relied upon to maintain the standard wage. In times like these when the market fails to give its protection, it seems unfair to impose the shock of depression upon laborers in weak enterprises, who are for the time bereft of their bargaining power and at the mercy of their employers.

"A moment's consideration makes clear how inequitable for common carriers is 'the ability to pay' as a basis of wages. It would reward men of like ability who do identical work with quite dissimilar earnings and would cause living standards to vary with the accidental fact of the choice of an employer. Moreover, it would make earnings depend upon accidental considerations over which employees have no control. The result appears all the more bizarre when it is remembered that the object of the Texas law was not to dismember systems, or to segregate for purposes of operation the Texas lines, but only to keep railway litigation out of the federal courts. One must ignore realities to make a device contrived to force the railroads into state courts the reason for a payment of different rates of wages upon different parts of the system.

"But, whatever its merit, the principle of the ability of the individual carrier to pay has found little expression in our railway policy. It has, again and again, been rejected by boards called upon to arbitrate or to mediate labor disputes. The collective bargaining between carriers and the brotherhoods proceeds upon the recognition of the desirability of standard rates. Moreover, the railways of the country are an interlocking unit; lines may be maintained as essential to the transportation service which cannot pay their own way. For many years Congress has been confronted with the problem of the 'weak' and the 'strong' railways; the rates must be uniform upon all lines but each must meet its costs. Yet legislation has not tried to accommodate expenses to abilities to pay; instead it has attempted to effect an equilibrium by some device which would compel the strong to carry the weak railroads. This intent finds expression in the recapture clause, in the order of the Interstate Commerce Commission, providing for a pool from the increase in freight rates, and in the provision of the Transportation Act of 1920 for the consolidation of roads into systems. In these days of 'national recovery,' when every effort is being made to maintain wages and to conserve the volume of purchasing power upon which the prosperity of a going industrial system depends, the requirements of national policy become doubly compelling. If the interests of private ownership clash with the demands of national policy, the lesser must give way to the greater value."

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 2205, 150 Broadway, New York City.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmiths' Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago. Next meeting, January 20, 1934.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 Federal St., Chicago. Annual meeting, October 19-21, 1933, Congress Hotel, Chicago, Ill.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—(See American Transit Association.).

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.
- Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York.
  - Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
  - Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.
  - Protective Section.—J. C. Caviston, 30 Vesey St., New York.
  - Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, October 3-5, 1933, Hotel Stevens, Chicago, Ill.
  - Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, Annual Meeting, June 12-14, 1934, Hotel Stevens, Chicago, Ill.
- Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.
- Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
- Division IV.—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Annual meeting, March 13-15, 1934, Palmer House, Chicago, Ill. Exhibit by National Railway Appliances Association.
  - Construction and Maintenance Section.—E. H. Fritch, 59 East Van Buren St., Chicago. Annual Meeting, March 13-15, 1934, Palmer House, Chicago, Ill.
  - Electrical Section.—E. H. Fritch, 59 East Van Buren St., Chicago.
  - Signal Section.—R. H. C. Balliet, 30 Vesey St., New York.
- Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago.
  - Equipment Painting Section. — V. R. Hawthorne, 59 East Van Buren St., Chicago.
- Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York.
- Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago.
- Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York.
- Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry. 319 N. Waller Ave., Chicago, Ill.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. A. Senter, Ind., Agt., N. C. & St. L. Ry., Nashville, Tenn. Semi-annual Meeting, December 7-8, 1933, Sherman Hotel, Chicago, Ill.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association. Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago, Ill. Annual meeting, March 13-15, 1934, Chicago, Ill. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITOR'S ASSOCIATION.—Miss E. Kramer, M-K-T Employees Magazine, St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Exhibit by Tool Foremen Suppliers' Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division. Marion B. Richardson, Ahrens & Richardson, 30 Church St., New York.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Annual meeting, September 18-20, 1933, Hotel Stevens, Chicago, Ill.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Annual meeting, January 23-25, 1934, Houston, Tex.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual Meeting, 1934, Cleveland, Ohio.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—S. A. Baber, High Grade Manufacturing Co., 10418 St. Clair Ave., Cleveland, Ohio. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2276 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July, and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago. Regular meetings, second Monday of each month, except June, July and August, Bismarck Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Club not active at present time.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—J. F. Brady, Main and Barton Sts., St. Louis, Mo. Operation suspended indefinitely.

CENTRAL RAILWAY CLUB OF BUFFALO.—M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Regular meetings second Monday of each month, except June, July and August, Hotel Cleveland, Cleveland, Ohio.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Building, Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn.

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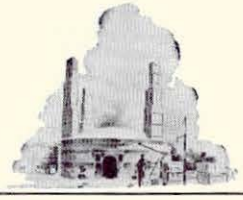
SUPPOSE EVERY RAILROAD *had its* OWN ARCH BRICK DESIGN



Look about and see how standards on many items vary with each railroad.

Think of the confusion and expense involved if this also applied to Arch Brick.

If a road ran short, it would wait for weeks for its special brick to be made! At joint terminals, the confusion would be unendurable.

Years ago, American Arch Company foresaw such a situation and fostered the standardization of Arch tubes and of Arch Brick sizes and designs.

Think of the grief this good work saved.

There's More to SECURITY ARCHES *Than Just Brick*

In everything having to do with Arch Brick, American Arch Company for a quarter of a century has served the railroads. This service has had and still has a high value.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y.
NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual meeting, October 10-13, 1933, Hotel Gibson, Cincinnati, Ohio.
NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—(See Railway Tie Association.).
NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Suite 322, 910 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.
NATIONAL SAFETY COUNCIL.—Steam Railroad Section (See Safety Section, American Railway Association).
NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September. October and November meetings to be held at University Club, 40 Trinity Place, Boston, Mass.
NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York. Regular meetings third Friday of each month, except June, July and August, 29 W. 39th St., New York City.
PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings second Thursday of each month, alternately in San Francisco and Oakland.
RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, Transportation Building, Washington, D. C.
RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton, (Treas. and Asst. Sec.), First National Bank Building, Chicago, Ill. Annual meeting, November, 1933, Hotel Stevens, Chicago, Ill.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meetings, fourth Thursday of each month except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.
RAILWAY ELECTRICAL SUPPLY MANUFACTURERS ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.
RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 17-18, 1933, Hotel Stevens, Chicago, Ill.
RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division Purchases and Stores Division and Motor Transport Division, American Railway Association.
RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division I.
RAILWAY TIE ASSOCIATION.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.
RAILWAY TREASURY OFFICERS ASSOCIATION.—L. W. Cox, 1428 Broad Street Station Building, Philadelphia, Pa. Annual meeting, October 6-7, 1933, Palmer House, Chicago, Ill,
ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal. Drawer 24, M. P. O., St. Louis, Mo. Meetings temporarily suspended.
SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York. Meets with A. R. A. Signal Section.
SOCIETY OF OFFICERS, EASTERN ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October 7-8, 1933, Scranton, Pa.
SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.
SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Division V. Equipment Painting Section.
TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.
TORONTO RAILWAY CLUB.—N. A. Walford, P. O. Box 8, Terminal "A," Toronto. Regular meetings first Friday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.
TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters and Maintenance of Way Association.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O.
WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Equipment and Supplies

IRON AND STEEL

THE CHESAPEAKE & OHIO board of directors is reported to have authorized the purchase of 31,481 tons of rail.

THE CENTRAL OF NEW JERSEY has ordered, from the Phoenix Bridge Company, 570 tons of structural steel for use on the bridge at Newark, N. J.

PENNSYLVANIA.—The Ferguson & Edmondson Company, Pittsburgh, Pa., has placed with the American Bridge Company, an order for 130 tons of structural steel for use in connection with the grade crossing elimination work on the line of this road in Elma, New York.

MISCELLANEOUS

THE CHICAGO, BURLINGTON & QUINCY will open its shops at Havelock, Neb., on full time on September 11.

THE GRAND TRUNK WESTERN has placed an order with the Timken Roller Bearing Company for trailer bearings for use under five of its locomotives.

CHICAGO, BURLINGTON & QUINCY.—The Edward G. Budd Manufacturing Company has placed with the Timken Roller Bearing Company an order for all roller journal bearings to be used under the stream-lined passenger train, which the Budd Company is building for this railroad.

THE UNION PACIFIC, effective September 1, increased the working time of 2,019 shopmen by placing locomotive and car repair shops at various points on its lines on a working program of 160 hours a month. Shops affected by the order are at Omaha, Neb., Valley, Columbus, Grand Island, Kearney and Sidney, Rawlins, Wyo., and Cheyenne, Denver, Colo., Ellis, Kans., Pocatello, Ida., and Los Angeles, Cal. It is estimated that this move will add $100,000 a month to the operating expenses of this company.

THE NEW YORK CENTRAL is planning to employ in its repair shops during September five per cent more men than it employed in August and 29 per cent more than in July. The total number of workers will be increased 388, rising from 7,825 employed in August to 8,213 in September. The allotments of labor will be as follows: Locomotive shops, 152 days and 4,849 men; freight car shops 120 days, 2,182 men; passenger car shops 62 days, 1,182 men. These increases are being made from a desire to aid in the national recovery program as well as to take care of expected increases in traffic this Fall and Winter. Up to August 5, the New York Central Lines had added in all departments a total of 19,341 employes since June 1.

Supply Trade

The **Chicago Pneumatic Tool Company** has opened a new branch office at 1028 Sixth avenue south, Seattle, Wash., with **A. M. Andresen** as manager.

William E. Millhouse is now president of the **Burden Iron Company,** Troy, N. Y. Prior to his election Mr. Millhouse had been executive vice-president, while the position of president remained vacant, since the death of James A. Burden on June 1, 1932.

The **Locomotive Appliance Institute** has been organized for the purpose of formulating a code for submission to the National Recovery Administration on behalf of manufacturers of locomotive appliances. **J. F. Farrell** of the Nathan Manufacturing Company, 250 Park avenue, New York, has been elected president of the new organization.

The New York offices of the **General Electric Company** have been moved from 120 Broadway to the General Electric building, 570 Lexington avenue. Also located now at the latter address are the New York offices of four General Electric associated companies,—the General Electric Contracts Corporation, the G. E. Employees Securities Corporation, the General Electric Realty Corporation, and the International General Electric Company, Inc.

W. C. Harris has been appointed assistant engineer of the transportation department of the **General Electric Company,** Erie, Pa., and as such will act as a general assistant in charge of the office in the absence of H. L. Andrews. Mr. Harris was graduated from Virginia Polytechnic Institute in 1911 and entered the testing department of the General Electric Company the same year. In 1913 he entered the railway motor engineering department,

W. C. Harris

After service in France during the war, he re-entered the railway motor engineering department in 1919, and in 1925 was transferred to what is now the transportation engineering department under Mr. Andrews. At that time he was assigned to the automotive engineering department at Lynn, Mass., and in 1927 became assistant engineer of that department. After

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One Price
For You

Many railroads are regularly using the Elesco unit remanufacturing service . . . . it is a guaranteed "one-price" purchase for a proven service. By using remanufactured units ***there is absolutely no further expense*** — either directly in roundhouse or backshop, or indirectly through reduced efficiency — for the life of the units. This is guaranteed.

As a "one-price" purchase the cost of the Elesco unit remanufacturing service is very nominal. This is because unserviceable units are entirely rebuilt by the same process used for manufacturing new units, yet at a price far below that of new units.

Banish superheater repair costs by standardizing on the "one-price" Elesco unit remanufacturing service. Particulars on request.

•

To maintain full superheater efficiency and get full return per dollar of expenditure the unit return bends must be maintained at exactly their original dimensions both inside and outside. When superheater units become unserviceable, the return bends, which are integral with the tubing, can be replaced only in the same manner the original units were made. That is remanufacturing — restoring units to a condition, practically equal to new units.

•

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, Inc.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

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Superheaters . Feed Water Heaters . Exhaust Steam Injectors . Superheated Steam Pyrometers . American Throttles

the transfer of the automotive division to Erie in 1930, Mr. Harris was engineer of the automotive division. Following the promotion of Mr. Harris, the automotive division of the transportation engineering department has been combined with the motor division under the general direction of **M. R. Hanna.** Mr. Hanna has been in charge of the motor division a number of years.

E. D. Campbell, who has been in charge of the **American Car & Foundry Company's** engineering department at St. Louis, Mo., was, on September 1, appointed assistant general mechanical engineer, with headquarters at the A. C. F.'s Berwick, Pa., plant. In his new position, Mr. Campbell is second in charge to V. R. Willoughby, general mechanical engineer of A. C. F. The promotion of Mr. Campbell, who has been located at St. Louis since 1920, occurs in connection with further concentration of A. C. F. engineering activities at Berwick; events have proved, the announcement states, that the redistribution of the A. C. F. engineering personnel has proved most satisfactory, both from the standpoint of the company and its customers. **Allen W. Clarke,** mechanical engineer, will succeed Mr. Campbell at St. Louis, while General Mechanical Engineer Willoughby will continue to divide his time between the general office in New York and the Berwick branch of the Engineering section.

Code Filed by Special Track Equipment Industry

The Manganese Track Society has filed with the National Recovery Administration a code of fair competition for the railway special track equipment industry, proposing minimum wages for common labor by districts ranging from 30 to 40 cents an hour and a maximum of 40 hours a week employment averaged over a six months' period. The term railroad special track equipment is defined to include all special T-rail track work of carbon steel, manganese steel and/or other metals for use in railway track made with standard Tee rails of 60 lb. per yard and heavier, including all switches, switch points, switch stands, ground throws, frogs, crossings, stock and special connecting rails, guard rails, guard rail clamps, bridge rails and expansion joints and repairs made and all parts furnished for such items. It does not include compromise joints, tie plates, rail braces, gage rods, except when furnished with above-specified items, rail except when sold in connection with above items and on which additional work other than drilling is performed. The proposed code follows in many respects that recently approved by the President for the iron and steel industry. It is provided that the administration of the code shall be under the direction of the board of directors of the society and that until the code has been amended so as to permit it none of the members shall initiate the construction and/or equipment of any new plant or plants for producing railroad special track equipment.

The board of directors would be given power on its own initiative, or on complaint of any member of the code, to investigate any prices made for any products, and to require members to furnish information concerning the cost of manufacturing. If it shall determine that such prices are unfair, having regard to the cost of manufacturing in accordance with the accepted method of determining costs in the industry prescribed in the code, and that the maintenance of such unfair prices may result in unfair competition in the industry, the board of directors may require the member of the code to revise such prices and the basis of making them.

Financial

CHESAPEAKE & OHIO.—*Dividend Increased.*—The board of directors of this road, at a meeting in Cleveland, Ohio, on August 29, declared a dividend of 70 cents a share on the road's common stock for the third quarter of this year. This represents an increase of 7½ cents over the former quarterly rate of 62½ cents. The dividend is payable on October 2 to stockholders of record of September 11.

CHICAGO, BURLINGTON & QUINCY.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its branch line between Galesburg, Ill., and Fairview, 28.83 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—*Consolidation Proceedings.*—This company has asked the Interstate Commerce Commission to modify the report in which it found the proposed consolidation of the Rock Island and eleven subsidiaries would be in the public interest by omitting the requirement that the company agree to abide by such findings as the commission might make as to the acquisition of the Wichita Northwestern. It was stated that since the company is now under the jurisdiction of the federal court in a reorganization proceeding it has no legal power to accept this condition and also that no more justification exists for such a requirement as to the Wichita Northwestern than as to any of the other short lines assigned to the Rock Island system in the commission's consolidation plan.

NORTHWESTERN PACIFIC—SOUTHERN PACIFIC.—*Abandonment, Acquisition and Trackage Rights.*—The Interstate Commerce Commission has approved the plan proposed by these roads for eliminating duplicate rail facilities while at the same time providing a more economical, though adequate, service in the Sonoma Valley, Cal. The plan involves the abandonment by the Northwestern Pacific of that portion of its Sonoma Valley branch extending from Yulupa to Glen Ellen, 2.49 mi., its Sebastopol branch extending from Santa Rosa to Sebastopol, 6.33 mi., and its Donahue branch extending from Petaluma to Donahue, 5.67 mi. The Southern Pacific will abandon sections of its Santa Rosa branch extending from Schellville to Yulupa, 8.07 mi. and from Los Guilicos to Santa Rosa, 8.02 mi., and that portion of its Wingo-Union branch extending from Ramal to Wingo, 2.07 mi. In addition, the Northwestern Pacific will operate under trackage rights over that portion of the Southern Pacific's Santa Rosa branch between Schellville and Napa Junction, 11.3 mi. and will acquire and operate that portion of the same S. P. branch between Yulupa and Los Guilicos, 8.9 mi. along with 0.5 mi. of track, including a yard, extending from the center of Santa Rosa to the outskirts thereof.

READING.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to extend from October 1, 1933, to October 1, 1943, the maturity date of $2,644,000 of prior lien mortgage bonds of the Philadelphia & Reading, with interest at 4¼ per cent. The bonds were issued in 1868 and have been bearing interest at 5 per cent.

ST. LOUIS-SAN FRANCISCO.—*Abandonment.*—The Interstate Commerce Commission has authorized this road to abandon that part of its Deering branch extending from Wardell, Mo., to Fraily, 4.5 mi. and that part extending from Yukon, Mo., to Deering Junction, 4 mi.

WISCONSIN CENTRAL.—*Abandonment.*—This road has been authorized by the Interstate Commerce Commission to abandon a branch line extending from Athens, Wisc., to Goodrich, 10.55 mi. The same order permits the Minneapolis, St. Paul & Sault Ste. Marie to abandon operation of the line.

Average Prices of Stocks and of Bonds

	Aug. 29	Last week	Last year
Average price of 20 representative railway stocks..	50.55	48.11	30.73
Average price of 20 representative railway bonds..	72.91	73.39	67.69

Dividends Declared

Bangor & Aroostook.—Common, $.50, quarterly; Preferred, $1.75, quarterly, both payable October 2 to holders of record September 2.

Carolina, Clinchfield & Ohio.—$1.00, quarterly; Guaranteed Certificates, $1.25, quarterly, both payable October 10 to holders of record September 30.

Chesapeake & Ohio.—70c, quarterly, payable October 2 to holders of record September 11.

Dayton & Michigan.—87½c, semi-annually; 8 Per Cent Preferred, $1.00, quarterly, payable October 2 and October 3, respectively, to holders of record September 16.

Construction

NEW YORK, NEW HAVEN & HARTFORD.—This road has authorized the construction of new steam generating units to cost approximately $520,000 at Cos Cob, Conn.

PENNSYLVANIA.—This road has awarded to the Ferguson & Edmondson Company, Pittsburgh, Pa., a contract for work in connection with the elimination of the Bullis and Blossom roads crossings, which are located on its line about 0.7 mile west of Springbrook station, in the town of Elma, Erie county, New York. The New York Public Service Commission, as reported in the *Railway Age* of August 19, had previously approved the Ferguson & Edmondson Company bid, which was the lowest of the 17 submitted. The work is expected to cost approximately $65,500.

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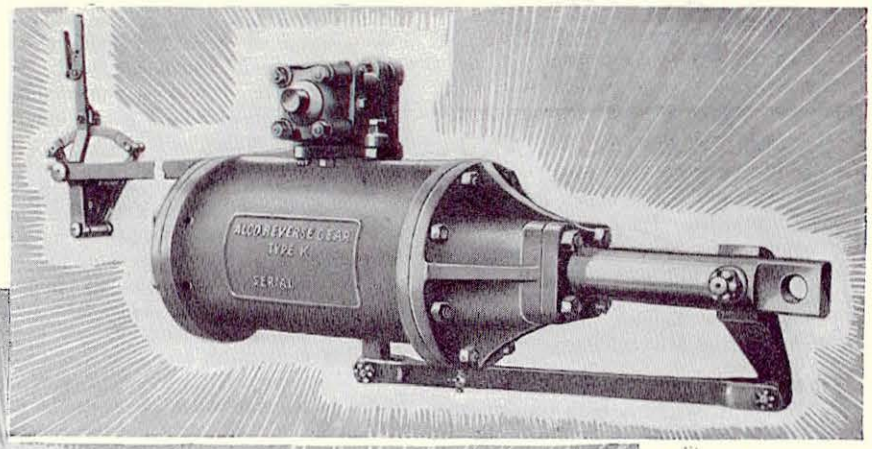
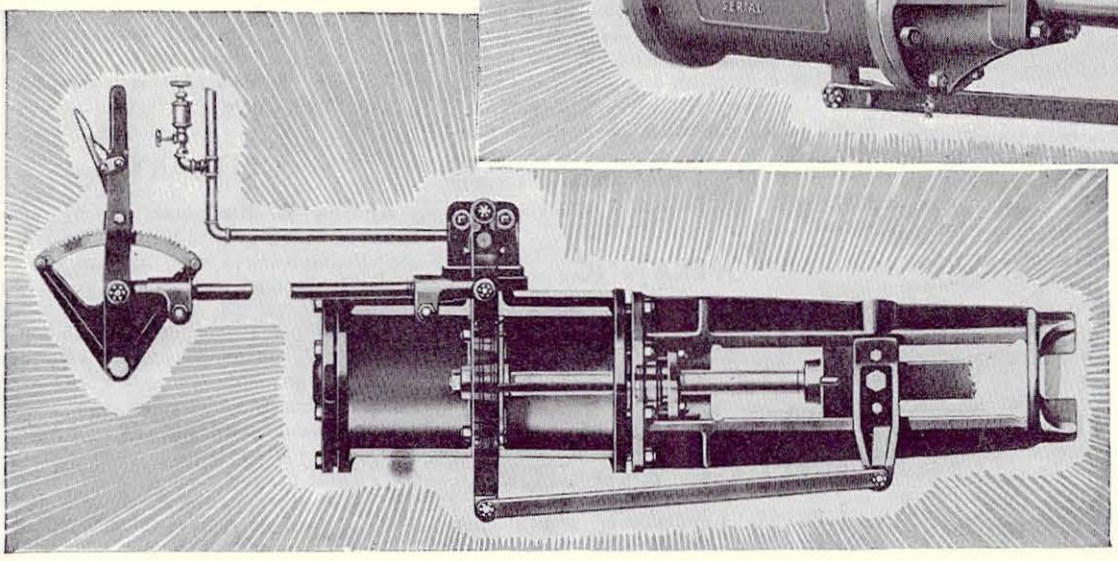
Alco



Type "K" Gear with trunk-piston rod.



Type "G" Gear with crosshead and guides.

REVERSE GEAR FACTS

CYLINDERS are accurately bored, reamed, and honed to a glass finish. They are truly round, not tapered.

Joints between cylinder and cylinder heads are ground — no gaskets used.

Piston rods are ground to size and polished. They are not combined with any part of the piston, but are held in piston by a tapered fit and large nut — same construction as the piston and piston rod on large steam locomotives.

All pins and bushings are hardened and ground to size.

And a hardened steel quadrant, with its 82 notches, permits very small changes in cut-off.

American Locomotive Company
30 Church Street New York N.Y.

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

J. T. Ludlum, freight claim agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been appointed also to the same position on the Duluth, South Shore & Atlantic and the Mineral Range.

Charles F. Losh, valuation engineer of the Norfolk & Western, with headquarters at Roanoke, Va., has retired and **S. H. Barnhart,** assistant valuation engineer, has been appointed to the newly created position of engineering assistant to the comptroller, with headquarters as before at Roanoke. The positions of valuation engineer and assistant valuation engineer have been abolished following the repeal of the recapture clause of the Transportation Act of 1920.

TRAFFIC

James Maney, general freight and passenger agent of the Duluth, South Shore & Atlantic and the Mineral Range, with headquarters at Duluth, Minn., has retired from active service after 51 years of continuous service with this company. **R. O. Hambly,** general freight agent at Duluth, has been appointed to the newly created position of assistant general freight agent with headquarters at Marquette, Mich., and the position of general freight agent at Duluth has been abolished. **D. C. Mohr,** contracting freight and passenger agent at Houghton, Mich., has been appointed general agent at Detroit, Mich., to succeed **A. W. Billington,** who has resigned.

Mr. Maney was born on May 5, 1868, at Marquette, Mich., and after a public school education entered railway service in May, 1886, as a messenger on the Marquette, Houghton & Ontonagon (now part of the D. S. S. & A.). Later Mr. Maney occupied the positions of clerk in the accounting department and chief clerk in the general passenger department, being promoted to general passenger agent in January, 1912. Mr. Maney's title was changed to general freight and passenger agent in 1931.

OPERATING

G. C. Nichols, superintendent of the Alabama, Tennessee & Northern, with headquarters at York, Ala., has been appointed to the position of general superintendent.

PURCHASES AND STORES

John H. Lauderdale, general purchasing agent of the Gulf Coast Lines and the International-Great Northern, with headquarters at Houston, Tex., has been promoted to general purchasing agent of all the Missouri Pacific lines, with headquarters at St. Louis, Mo. Mr. Lauderdale succeeds **W. A. Hopkins,** who has been appointed to the newly-created position of consulting purchasing agent at St. Louis. **A. A. Taylor,** assistant to the general purchasing agent of the Missouri Pacific Lines at St. Louis, has been promoted to the newly-created position of assistant general purchasing agent with the same headquarters. **W. R. H. Mau,** assistant purchasing agent of the Gulf Coast Lines and the International-Great Northern, has been appointed purchasing agent of these lines with headquarters as before at Houston, in which position he will assume the duties formerly discharged by Mr. Lauderdale.

OBITUARY

Andrew E. Buchanan, special representative of the general passenger agent of the Pennsylvania, with headquarters at Philadelphia, died at his home in Merion, Pa., on August 28. Mr. Buchanan had been with the Pennsylvania continuously for 43 years, having entered its service in 1890 as a stenographer in the passenger traffic department and serving consecutively from that date until 1927 as head of the company's tourist bureau, chief clerk to the general passenger agent, chief clerk in the passenger department, division ticket agent of the Eastern Pennsylvania division, division passenger agent, assistant general passenger agent and general passenger agent. In 1932, when the traffic department was reorganized, Mr. Buchanan became special representative.

Net Income, Class I Railways—June and Six Months

		Net Income 1933	Net Income 1932
Akron, Canton & Youngstown	June	$14,968	$13,054
	6 mos.	34,789	48,885
Alton	June	104,537	— 172,206
	6 mos.	— 396,889	— 861,284
Alton & Southern	June	27,090	22,430
	6 mos.	117,266	99,263
Atchison, Topeka & Santa Fe System	June	1,123,150	— 284,057
	6 mos.	— 3,610,632	— 1,927,797
Atlanta & West Point	June	— 7,596	— 28,252
	6 mos.	— 121,944	— 141,645
Western of Alabama	June	134	— 25,033
	6 mos.	— 37,332	— 119,137
Atlanta, Birmingham & Coast	June	— 19,306	— 94,468
	6 mos.	— 153,682	— 432,984
Atlantic Coast Line	June	— 188,469	— 994,032
	6 mos.	213,776	— 2,027,800
Charleston & Western Carolina	June	11,269	— 21,570
	6 mos.	87,690	— 47,635
Baltimore & Ohio	June	1,030,274	— 34,884
	6 mos.	— 3,641,292	— 4,752,299
Baltimore & Ohio Chic. Term.	June	.....	.....
	6 mos.	.....	.....
Staten Island Rapid Transit	June	.....	.....
	6 mos.	.....	.....
Bangor & Aroostook	June	— 42,678	— 11,311
	6 mos.	904,992	1,081,745
Belt Ry. Co. of Chicago	June	12,556	— 55,703
	6 mos.	— 20,757	— 332,069
Bessemer & Lake Erie	June	255,701	— 33,919
	6 mos.	— 368,912	— 1,082,385
Boston & Maine	**June**	403,440	**36,219**
	6 mos.	— 289,558	278,946
Brooklyn Eastern Dist. Terminal	June	5,571	— 12,612
	6 mos.	— 45,275	— 56,737
Burlington-Rock Island	June	— 61,508	— 82,904
	6 mos.	— 428,890	— 473,838
Cambria & Indiana	June	64,742	39,685
	6 mos.	428,186	380,636
Canadian Pac. Lines in Maine	June	.....	.....
	6 mos.	.....	.....
Canadian Pac. Lines in Vermont	June	.....	.....
	6 mos.	.....	.....
Central of Georgia	June	— 141,381	— 305,075
	6 mos.	— 1,560,154	— 1,532,645
Central New Jersey	June	— 175,386	— 426,328
	6 mos.	— 906,540	— 720,752
Central Vermont	June	— 58,959	— 76,922
	6 mos.	— 602,793	— 536,575
Chesapeake & Ohio	June	2,422,338	1,017,961
	6 mos.	10,391,976	8,797,037
Chicago & Eastern Illinois	June	— 133,282	— 359,710
	6 mos.	— 1,479,211	— 1,945,699
Chicago & Illinois Midland	June	28,943	— 129,238
	6 mos.	85,074	— 205,186
Chicago & North Western	June	— 5,636	— 1,183,620
	6 mos.	— 7,502,655	— 7,154,009
Chicago, Burlington & Quincy	June	800,266	— 192,593
	6 mos.	— 698,101	409,131
Chicago Great Western	June	106,128	— 125,980
	6 mos.	— 892,414	— 406,139
Chicago, Indianapolis & Louisville	June	— 81,615	— 199,657
	6 mos.	— 971,986	— 1,063,417
Chicago, Mil., St. Paul & Pacific	June	— 14,797	— 3,272,962
	6 mos.	— 8,632,115	—14,158,179
Chicago River & Indiana	June	106,176	6,868
	6 mos.	276,115	135,013
Chicago, Rock Island & Pacific	June	430,397	— 630,000
	6 mos.	— 4,850,590	— 4,984,335
Chicago, Rock Island & Gulf	June	— 223,740	— 198,645
	6 mos.	— 784,581	— 400,274
Chic., St. Paul, Minn. & Omaha	June	165,926	— 240,754
	6 mos.	— 1,097,104	— 1,888,802
Cinn. Union Terminal	June	— 265,968	.....
	6 mos.	— 801,538	.....
Clinchfield R. R.	June	— 55,353	— 226,949
	6 mos.	— 474,285	— 909,978
Colorado & Southern	June	— 83,315	— 126,590
	6 mos.	— 852,686	— 889,567
Ft. Worth & Denver City	June	28,790	— 3,794
	6 mos.	— 126,672	— 276
Columbus & Greenville	June	15,742	— 3,699
	6 mos.	11,454	— 15,726
Conemaugh & Black Lick	June	— 2,841	— 20,750
	6 mos.	— 74,802	— 123,806
Delaware & Hudson	June	— 305,670	— 656,140
	6 mos.	— 2,980,427	— 2,302,239
Delaware, Lackawanna & Western	June	121,194	— 610,853
	6 mos.	— 2,511,799	— 1,342,806
Denver & Rio Grande Western	June	— 258,772	— 523,882
	6 mos.	— 2,127,422	— 2,559,945
Denver & Salt Lake	June	10,765	— 17,467
	6 mos.	— 30,465	31,953
Detroit & Mackinac	June	— 5,914	— 4,084
	6 mos.	— 65,211	— 62,706
Detroit & Toledo Shore Line	June	21,907	— 23,438
	6 mos.	196,706	135,217
Detroit Terminal	June	10,809	— 12,242
	6 mos.	10,684	— 18,023
Detroit, Toledo & Ironton	June	66,780	33,191
	6 mos.	25,609	— 33,445
Duluth, Missabe & Northern	June	159,663	— 153,431
	6 mos.	— 1,322,633	— 2,571,891
Duluth, Winnipeg & Pacific	June	— 30,419	— 55,371
	6 mos.	— 285,223	— 242,585
Elgin, Joliet & Eastern	June	133,437	— 241,925
	6 mos.	— 695,396	— 1,220,249

Continued on next left-hand page

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for TRAIN LINES

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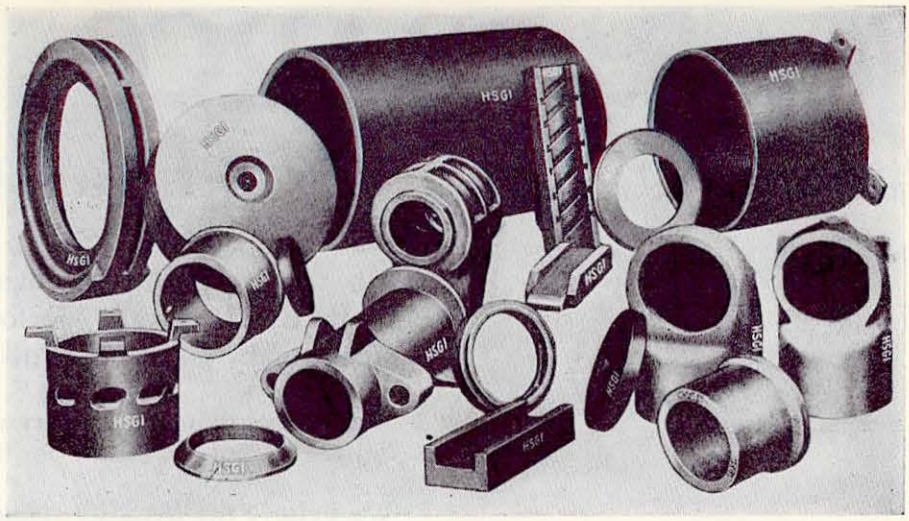
Net Income, Class I Railways—June and Six Months (Continued)

		Net Income 1933	Net Income 1932
Erie Railroad	June	494,826	— 666,449
	6 mos.	— 1,631,147	— 2,763,298
Chicago & Erie	June	.....	.....
	6 mos.	.....	.....
New Jersey & New York	June	— 28,510	— 26,506
	6 mos.	— 181,885	— 146,556
N. Y., Susquehanna & Western	June	— 46,692	— 54,878
	6 mos.	— 267,497	— 190,352
Florida East Coast	June	— 469,973	— 531,660
	6 mos.	— 691,563	— 1,031,627
Fort Smith & Western	June	— 28,337	— 25,470
	6 mos.	— 156,905	— 116,546
Galveston Wharf	June	— 15,868	— 6,501
	6 mos.	— 57,570	109,056
Georgia R. R.	June	— 13,878	— 56,572
	6 mos.	— 104,945	— 287,167
Georgia & Florida	June	— 43,194	— 60,668
	6 mos.	— 364,360	— 415,342
Grand Trunk Western	June	— 238,006	— 547,725
	6 mos.	— 2,345,775	— 2,573,208
Can. Natl. Lines in New England	June	— 96,960	— 87,999
	6 mos.	— 672,588	— 736,683
Great Northern	June	489,338	711,244
	6 mos.	— 7,263,491	— 8,891,219
Green Bay & Western	June	1,128	10,685
	6 mos.	4,558	14,006
Gulf & Ship Island	June	— 578	— 42,153
	6 mos.	— 110,966	— 176,768
Gulf, Mobile & Northern	June	36,609	— 60,055
	6 mos.	— 48,887	— 312,004
Illinois Central	June	729,084	— 895,927
	6 mos.	— 760,939	— 2,023,759
Yazoo & Mississippi Valley	June	54,801	— 233,196
	6 mos.	— 968,267	— 1,410,977
Illinois Central System	June	783,885	— 1,129,123
	6 mos.	— 1,729,206	— 3,434,736
Illinois Terminal	June	— 8,797	— 36,656
	6 mos.	— 253,937	— 185,926
Kansas City Southern	June	— 34,692	— 152,390
	6 mos.	— 685,827	— 734,653
Texarkana & Ft. Smith	June	.....	.....
	6 mos.	.....	.....
Kansas, Oklahoma & Gulf	June	37,482	2,219
	6 mos.	131,012	105,527
Lake Superior & Ishpeming	June	92,597	— 33,753
	6 mos.	— 36,639	— 228,931
Lake Terminal	June	46,800	9,241
	6 mos.	63,749	— 17,956
Lehigh & Hudson River	June	20,784	2,059
	6 mos.	89,573	58,477
Lehigh & New England	June	35,998	— 1,259
	6 mos.	78,222	134,454
Lehigh Valley	June	144,166	— 608,944
	6 mos.	— 2,603,545	— 1,964,307
Louisiana & Arkansas	June	6,781	— 10,725
	6 mos.	38,458	— 69,715
Louisiana, Arkansas & Texas	June	5,574	— 12,055
	6 mos.	— 68,174	— 81,117
Louisville & Nashville	June	264,072	— 795,074
	6 mos.	— 623,507	— 3,827,618
Maine Central	June	69,099	51,587
	6 mos.	— 107,737	— 196,927
Midland Valley	June	67,536	4,355
	6 mos.	39,808	— 12,682
Minneapolis & St. Louis	June	— 140,071	— 387,448
	6 mos.	— 1,607,624	— 1,974,680
Minn., St. Paul & S. S. Marie	June	— 267,533	— 490,068
	6 mos.	— 3,093,573	— 3,526,721
Duluth, South Shore & Atlantic	June	— 75,665	— 105,109
	6 mos.	— 674,816	— 619,856
Spokane International	June	— 23,547	— 32,157
	6 mos.	— 219,748	— 216,849
Mississippi Central	June	— 3,006	— 14,152
	6 mos.	— 87,986	— 126,909
Missouri & North Arkansas	June	— 39,239	— 39,258
	6 mos.	— 177,038	— 209,542
Missouri-Illinois	June	— 6,158	— 8,496
	6 mos.	— 100,367	— 68,419
Missouri-Kansas-Texas Lines	June	— 39,724	— 130,981
	6 mos.	— 2,267,273	— 1,262,248
Missouri Pacific	June	— 516,715	— 1,034,956
	6 mos.	— 7,292,212	— 5,951,736
Gulf Coast Lines	June	.....	.....
	6 mos.	.....	.....
International-Great Northern	June	102,634	— 113,295
	6 mos.	65,758	— 928,401
San Antonio, Uvalde & Gulf	June	— 41,480	— 20,449
	6 mos.	— 203,753	— 97,632
Mobile & Ohio	June	— 76,457	— 229,104
	6 mos.	— 830,303	— 1,210,034
Monongahela	June	56,262	21,570
	6 mos.	47,710	118,136
Monongahela Connecting	June	127	— 28,580
	6 mos.	— 111,338	— 168,700
Montour	June	122,748	12,257
	6 mos.	389,052	259,978
Nashville, Chattanooga & St. Louis	June	30,897	— 80,894
	6 mos.	6,016	— 486,087
Nevada Northern	June	— 1,741	1,673
	6 mos.	— 31,355	— 5,575
Newburgh & South Shore	June	— 6,999	— 17,959
	6 mos.	— 76,540	— 92,548
New Orleans Great Northern	June	— 19,147	— 51,835
	6 mos.	— 130,864	— 210,754
New Orleans Terminal	June	252	— 7,968
	6 mos.	4,892	— 64,941
New York Central	June	1,085,922	— 3,068,025
	6 mos.	— 6,884,587	—11,051,149
Indiana Harbor Belt	June	168,446	59,767
	6 mos.	617,481	407,907
Pittsburgh & Lake Erie	June	417,457	119,087
	6 mos.	792,440	593,996
New York, Chicago & St. Louis	June	235,544	— 504,963
	6 mos.	— 1,177,049	— 2,501,930
N. Y., New Haven & Hartford	June	30,327	— 179,216
	6 mos.	— 3,447,416	998,785
New York Connecting	June	35,492	— 78,384
	6 mos.	106,007	— 255,586
New York, Ontario & Western	June	44,450	1,820
	6 mos.	265,754	365,283
Norfolk & Western	June	1,984,600	1,090,055
	6 mos.	7,261,072	5,492,699
Norfolk Southern	June	240,623	57,160
	6 mos.	— 421,272	— 563,553
Northern Pacific	June	13,237	— 1,003,796
	6 mos.	— 6,879,067	— 4,782,089
Northwestern Pacific	June	— 114,052	— 137,540
	6 mos.	— 1,025,646	— 955,181
Oklahoma City-Ada-Atoka	June	— 7,328	— 19,332
	6 mos.	— 45,936	— 59,249
Pennsylvania Railroad	June	4,095,332	1,019,093
	6 mos.	3,969,427	6,863,403
Long Island	June	285,218	270,716
	6 mos.	556,079	1,096,641
Peoria & Pekin Union	June	12,334	— 8,425
	6 mos.	35,028	40,568
Pere Marquette	June	90,947	— 280,654
	6 mos.	— 1,199,663	— 1,487,898
Pittsburg & Shawmut	June	18,705	— 15,098
	6 mos.	— 141,702	— 119,544
Pittsburgh & West Virginia	June	47,089	— 83,953
	6 mos.	— 162,977	— 379,394
Pittsburg, Shawmut & Northern	June	— 11,740	— 24,753
	6 mos.	— 51,375	— 62,233
Reading	June	725,585	89,035
	6 mos.	1,711,447	938,102
Atlantic City	June	— 70,486	— 61,307
	6 mos.	— 525,696	— 540,238
Richmond, Fredericksb'g & Potomac	June	54,915	31,412
	6 mos.	271,929	264,839
Rutland	June	8,963	235
	6 mos.	— 95,344	— 15,514
St. Louis-San Francisco	June	— 367,726	— 886,357
	6 mos.	— 5,202,123	— 5,094,322
Ft. Worth & Rio Grande	June	— 29,950	— 24,806
	6 mos.	— 203,094	— 209,593
St. Louis, San Francisco & Texas	June	— 32,639	— 44,256
	6 mos.	— 292,907	— 357,950
St. Louis Southwestern Lines	June	28,721	— 289,449
	6 mos.	— 1,004,867	— 1,518,589
San Diego & Arizona Eastern	June	— 3,526	— 191,238
	6 mos.	— 84,480	— 541,065
Seaboard Air Line	June	— 640,815	— 979,308
	6 mos.	— 3,389,962	— 4,219,516
Southern Ry.	June	385,722	— 1,617,190
	6 mos.	— 1,962,102	— 6,893,622
Alabama Great Southern	June	78,668	— 61,741
	6 mos.	— 70,766	— 350,794
Cinn., New Orleans & Texas Pac.	June	243,102	— 44,843
	6 mos.	740,634	— 29,919
Georgia Southern & Florida	June	— 35,611	— 22,198
	6 mos.	— 141,083	— 114,573
New Orleans & Northeastern	June	— 39,564	— 78,403
	6 mos.	— 405,414	— 401,696
Northern Alabama	June	— 6,526	— 26,535
	6 mos.	— 75,035	— 116,678
Southern Pacific Transportation Sys.	June	692,582	852,828
	6 mos.	— 8,347,142	— 5,479,048
Spokane, Portland & Seattle	June	— 160,379	— 236,461
	6 mos.	— 1,630,773	— 1,668,461
Tennessee Central	June	— 8,174	— 15,302
	6 mos.	— 56,581	— 76,205
Term. R. R. Assn. of St. Louis	June	19,334	— 123,276
	6 mos.	— 362,282	— 760,443
Texas & Pacific	June	134,028	16,996
	6 mos.	— 473,183	— 590,472
Texas Mexican	June	— 35,220	— 31,935
	6 mos.	— 150,782	— 59,657
Toledo, Peoria & Western	June	10,965	— 1,043
	6 mos.	43,285	— 4,586
Toledo Terminal	June	17,128	— 12,341
	6 mos.	10,995	— 28,543
Union R. R. of Penna.	June	19,192	— 129,896
	6 mos.	— 747,185	— 879,290
Union Pacific	June	6,041,001	5,192,381
	6 mos.	10,514,534	10,470,867
Oregon Short Line	June	129,217	— 192,547
	6 mos.	— 518,875	— 671,264
Oregon-Wash. R. R. & Nav. Co.	June	— 271,974	— 424,522
	6 mos.	— 2,458,019	— 2,755,706
Los Angeles & Salt Lake	June	— 30,135	66,984
	6 mos.	— 817,304	— 500,080
St. Joseph & Grand Island	June	44,257	— 9,640
	6 mos.	162,839	112,063
Utah	June	— 36,368	— 33,855
	6 mos.	— 50,068	— 56,172
Virginian	June	284,613	15,269
	6 mos.	1,076,194	820,822
Wabash	June	— 109,980	— 639,673
	6 mos.	— 3,444,631	— 4,020,322
Ann Arbor	June	— 9,935	— 69,452
	6 mos.	— 218,793	— 221,632
Western Maryland	June	24,392	— 78,738
	6 mos.	41,921	72,335
Western Pacific	June	— 193,700	— 364,203
	6 mos.	— 1,725,699	— 1,815,846
Wheeling & Lake Erie	June	164,567	— 61,980
	6 mos.	269,425	— 267,329
Wichita Falls & Southern	June	— 2,415	— 3,100
	6 mos.	— 48,665	— 60,375



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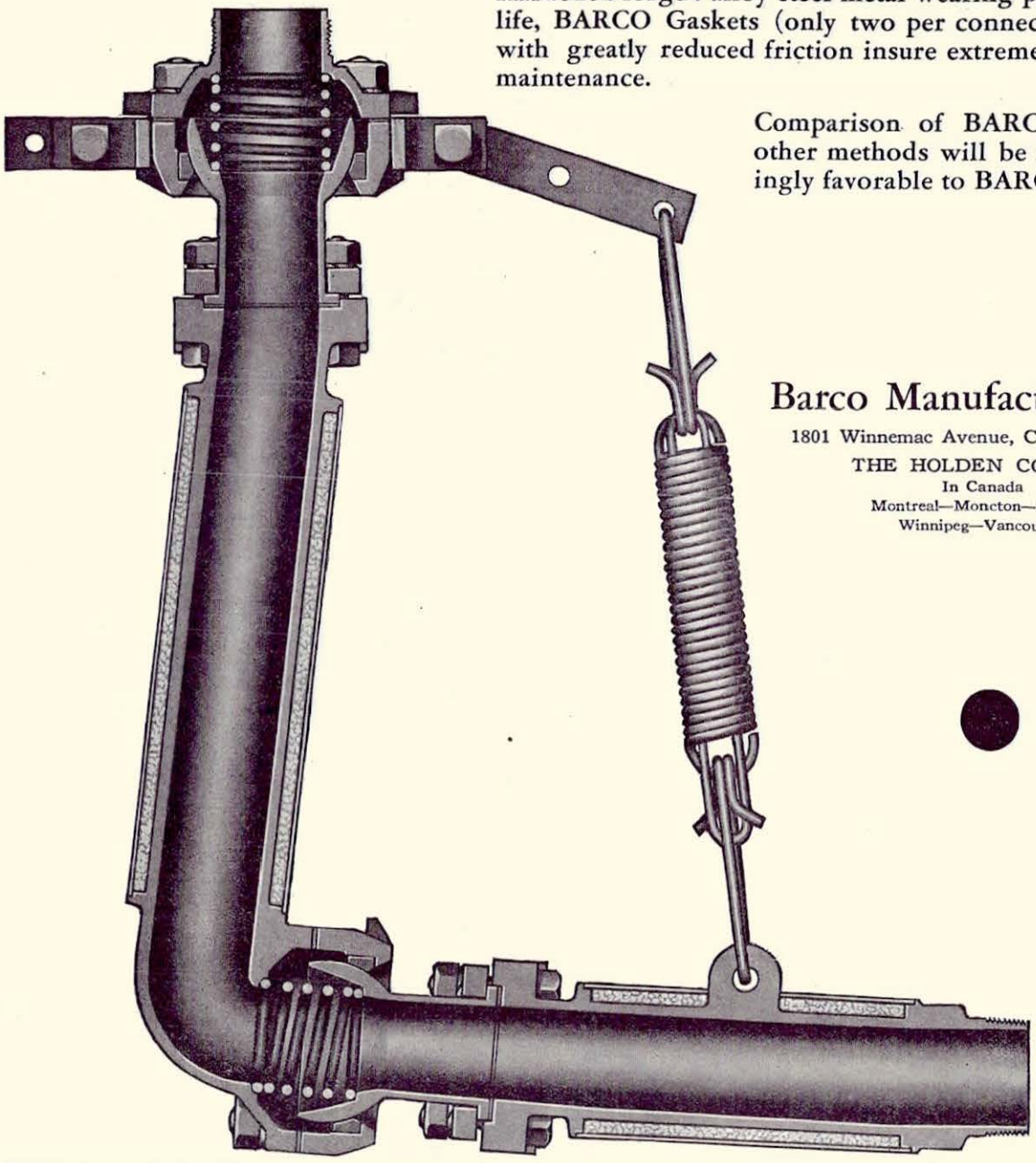

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By

John H. Frederick, Ph. D.,
Frank T. Hypps, Ph. D.,
and
James M. Herring, Ph. D.

Instructors in the Wharton School of Finance and Commerce; University of Pennsylvania

Regulation of the financial affairs of railroads by the Federal government through the Interstate Commerce Commission, under the Transportation Act of 1920, is clearly explained in this book. The various tests applied by the Commission in determining the elements of public interest to which the statute usually refers are traced, together with the nature and reasons for the Commission's action in regulating the financial affairs of the railroads.

Contents

Introduction—Certificates of Public Convenience and Necessity for Construction and Abandonment of Railroads—The Acquisition of Control of Carriers—The Recapture of Excess Earnings—The Issuance of Securities and Assumption of Obligations—Interlocking Directorates—Appendices: Provisions of the Interstate Commerce Act Administered by the Finance Bureau of the Interstate Commerce Commission — New Railroad Construction — Abandonments—Bibliography—Index.

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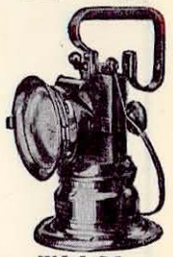

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For Complete Alphabetical Index to Advertisers see page 34

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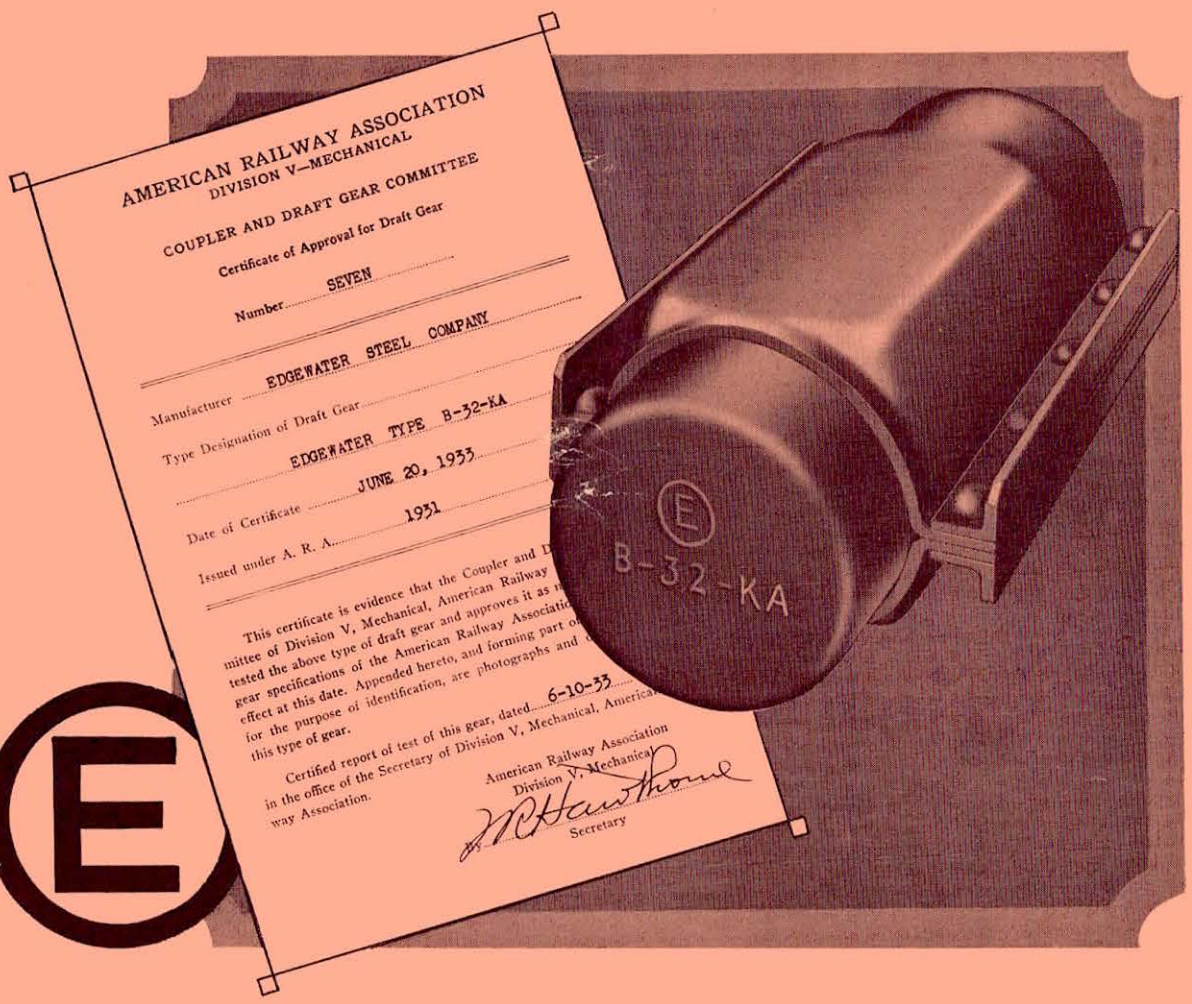
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Number SEVEN
Manufacturer EDGEWATER STEEL COMPANY
Type Designation of Draft Gear
EDGEWATER TYPE B-32-KA
Date of Certificate JUNE 20, 1933
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Division V, Mechanical
Secretary
E
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PITTSBURGH, PENNSYLVANIA

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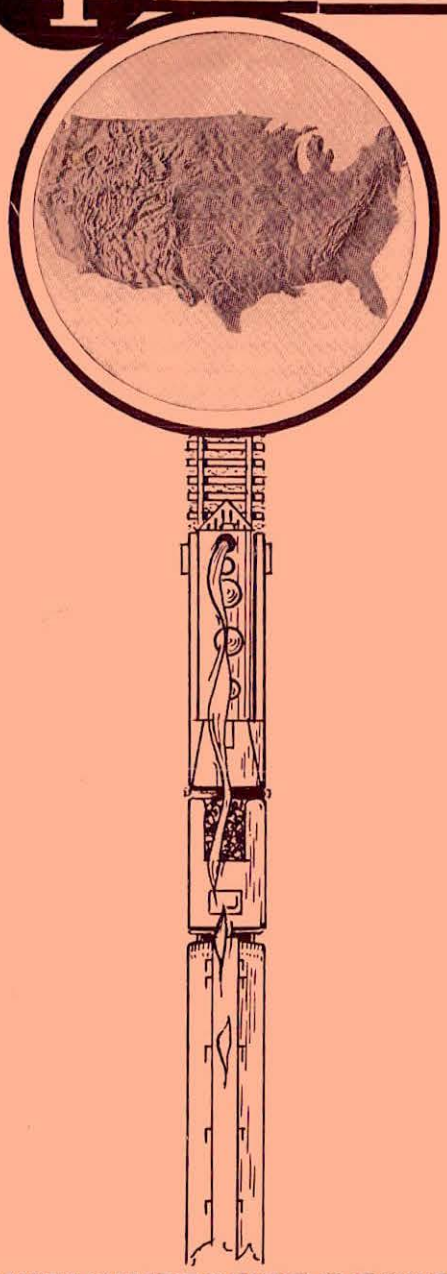

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